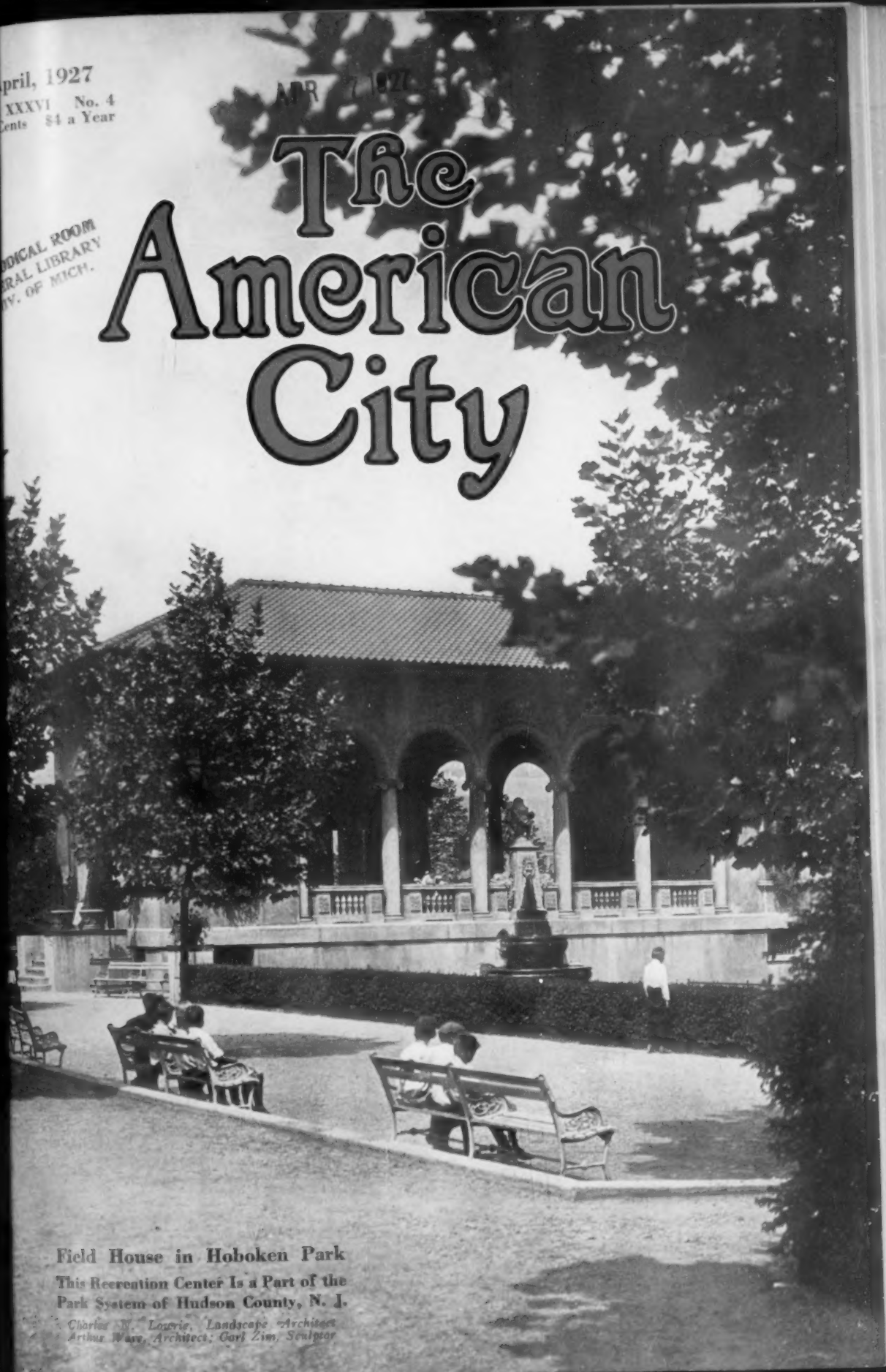
pril, 1927
XXXVI No. 4
Cents $4 a Year

APR 7 1927

DICAL ROOM
RAL LIBRARY
IV. OF MICH.

The American City



Field House in Hoboken Park

This Recreation Center Is a Part of the Park System of Hudson County, N. J.

Charles N. Lowrie, Landscape Architect
Arthur Ware, Architect; Carl Zim, Sculptor

Fifth Avenue, Youngstown, Ohio.

Worth Considering

When you purchase your suits of clothes or your shoes from the same maker for ten or more years, there exists complete satisfaction with the manufacturer and his product.

The same goes for paving materials.

It is well worth considering that a number of our cities have paved their streets with TEXACO ASPHALT for ten years and upward.

TEXACO

New York
Philadelphia
Richmond
Boston
Jacksonville

THE TEXAS COMPANY, U.S.A.

Asphalt Sales Department

17 Battery Place, New York City

Chicago
Cleveland
Kansas City
Dallas
Houston

VOL. XXXVI. No. 4 THE AMERICAN CITY, April, 1927 Price, 50 Cents; $4 a Year
Entered as second-class matter, April 16, 1923, at the Post Office at New York, N. Y., under Act of March 3, 1879.
Issued Monthly by American City Magazine Corporation, 443 Fourth Ave., New York. Printed in U. S. A.

Annual subscription rate to any part of the world, $4.00. Back numbers available.

HAROLD S. BUTTENHEIM
Editor

THEODORE R. KENDALL
Secretary and Engineering Editor

M. V. FULLER
Associate Editor

EDGAR J. BUTTENHEIM
President and Manager

HERBERT K. SAXE
Treasurer

L. P. ANDERSON
Advertising Manager

The American City

Published monthly by
American City Magazine
Corporation
443 Fourth Ave., N. Y.

Chicago Office
Tribune Tower

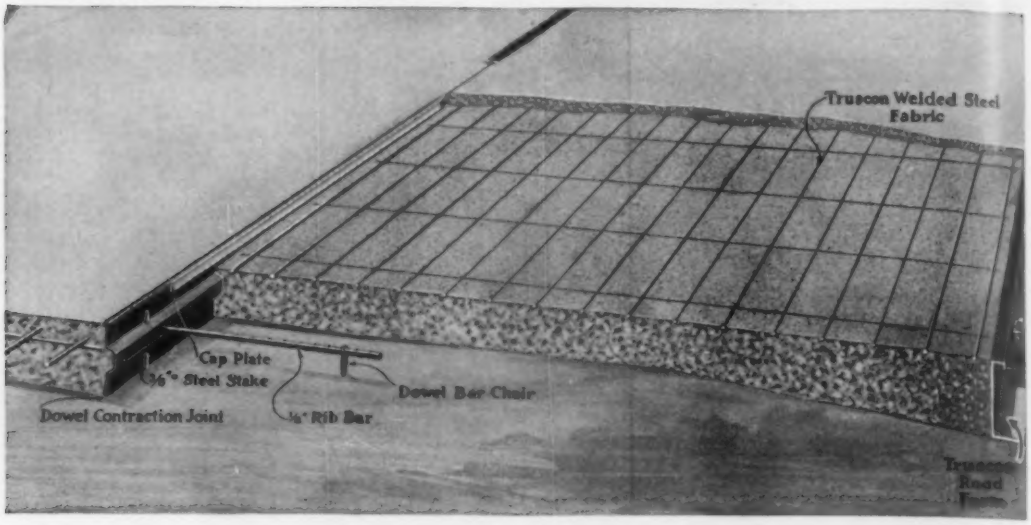
TOM DIX
Vice-President

Vol. XXXVI — INDEX TO CONTENTS, APRIL, 1927 — No. 4

Accident Prevention
Toledo's Safety Campaign 545
Eye Tests for Auto Drivers 547
Safety Competition for Pupils and Teachers 547
Aerial Surveying for Tax Equalization 522
Buildings, Copper and Brass for 571
Cartoons 511
Child Welfare Work by Counties 458
City Beautification 480
City Planning and Zoning
"Concentric Squares" for Residential Districts 452
Opening Up Allen Street, New York 454
Encroachment of Buildings on Street Line 486
Control of Subdivision Development 493, 530
City Plan, Blackwell, Okla. 531
Zoning Notes 555
Display Maps to Advertise City Planning 557
Civil Service and Political Meddling 543
Clean-Up Campaign, Cincinnati 496
Conventions—When and Where 569
Drainage
Porous Concrete Pipe 575
Cast Iron Headwall for Corrugated Pipe ... 577
Fencing for Playgrounds and Parks 512
Finance
New Financial Statistics 516
Bond Issue to Retire Indebtedness 539
Booklet on "The Taxpayer's Dollar" 541
Funded Debt of New York City 543
The Funding of Receipts 549
The Municipal Bond Market 553
Fire Prevention and Control
Campaign in Cincinnati 496
Inter-Chamber Fire Waste Contest 530
Fire-Alarm Apparatus, Brookline 532
Lindenhurst Fire Department 535
Flowers for the Flowerless 543
Forestry
Protection of Roadside Trees 494
$100,000 to Further Forestry 495
Municipal Forest Pays City Expenses 527
Forward Steps 531
Grade-Crossing Elimination
Minnesota Grade-Crossing "Stop Law" .. 478
A Forward-Looking Court Decision 525
In Baltimore 534
Health
Tuberculin Testing for Safe Milk 510
Control of Rabies 514
Cooperative Effort by Chamber of Commerce 541
May Day for Child Health 545
Health Regulation for Carnivals and Circuses 547
Highways
Control of Work on City Streets 456
Granite Block Pavements 475
Bituminous Pavement Construction 499
Old Brick Street Relaid 515
Expansion Joint with Fiber Board Base .. 573
Rotary Dryer for Asphalt Plants 579
Chip Spreader for Road Work 585
Humor 511
Items and Ideas 541
Legal Decisions 559
Library Service Free 498
Live Wire Club, Binghamton 537
Municipal Index for 1927 443
Municipal Officials and Offices
Partisan Appointments Not Wise 465
City Engineer and Board of Public Works 491
Calculating Machines 575
A Compact Blueprint System 581
News and Illustrations 571
Parks and Recreation
Creating Beauty in Playgrounds 445
Two Thousand Counties Need Parks 503
School Playground Surfacing 537
Pollution of Water-Fronts 541
Small Power Lawn-Mower 581
Knockdown Bleachers 583
Police Regulation of Traffic 527
Port Development, Baltimore 534
Power-Plant for Street Lighting 470
Prohibition, Effects of 459
Publications 563
Radio Regulation, Portland, Ore. 528
Real Estate Booms Opposed 557
Salaries and Increased Living Costs 449
Sewers and Sewerage Systems
Financing Sewerage System, Troy, Pa. 450
Comparative Costs of Sewer Cleaning 581
Protection of Concrete 587
Street Cleaning and Snow Removal
Snow-Removal Demonstration 469
Street-Cleaning Costs Reduced 490
Taxation
Tax Tabulation, Florida 474
State Supervision of Municipal Expenditures 492
San Francisco Revaluating Real Estate ... 535
Traffic
Designing Highways for Safer Traffic 484
Restricted Traffic District Proposed 507
Another Year's Damage by Autos 526
Zone-Painting Machine 583
Waste Disposal, Sioux City, Iowa 487
Water-Supply and Water-Works
Pitometer Surveys 466
Filtration Plant, Goldsboro, N. C. 471
Water Softening, Springfield, Ill. 472
Automatic Heat for Pumping-Station 477

See also Municipal and Civic Publications, page 563

The offices of THE AMERICAN CITY, 443 Fourth Ave., N. Y., are headquarters for information on equipment for municipal work. If you want catalogs, prices or names of manufacturers, let us help you.



Construction Method of a Modern Road

A Complete Line of Truscon Products for Reinforcing Concrete Roads and Pavements

Welded Steel Fabric, for Permanency
Contraction Joints, for Safety
Rib Bars, for Protection
Curb Bars, for Protection
Steel Road Forms, for Economy and Speed

HANDBOOK

"Modern Road Construction and Field Book"
New and cataloged edition free on request

TRUSCON STEEL COMPANY, Youngstown, Ohio

WAREHOUSES AND OFFICES IN ALL PRINCIPAL CITIES

TRUSCON

Vol. XXXVI
No. 4

The American City

APRIL
1927

443 Fourth Avenue
New York

50 Cents
$4 a Year

Now Ready: The Municipal Index for 1927

THE fourth annual edition of THE AMERICAN CITY'S yearbook, *The Municipal Index*, is now ready for distribution. In mere bulk it is the largest of the series yet issued; and the publishers believe that a new standard has been set also in the value of the volume to municipal and county officials and others interested in public improvement activities.

Eighteen Sections—711 Pages

In this 1927 edition the method of classification which was so satisfactory in previous years has been retained. The 711 pages of text, tables, condensed catalogs, etc., are divided into eighteen sections, the titles and number of pages in which are as follows:

Title of Section	No. of Pages
Maps and City Lists	64
Administration and Planning	28
Classes of Municipalities; Budget and Election Dates	7
National, State and Local Organizations	12
Mayors and City Managers	8
Street and Road Construction and Maintenance	83
Street Cleaning and Snow Removal	17
Street and Highway Lighting	37
Street and Highway Traffic Regulation	69
Water-Supply and Purification	130
Swimming Pools and Bathing Places	29
Power-Plant Equipment and Operation	15
Sewers, Sewerage and Sewage Disposal	49
Garbage, Ashes and Rubbish—Collection and Disposal	13
Motor Trucks in Municipal Departments	14
Fire and Police Departments	38
Parks, Playgrounds and Public Recreation Facilities	54
Directory of Consultants	7
Indexes and miscellaneous material	37

Articles and Authors

Articles written especially for the 1927 *Municipal Index* include:

Municipal Progress in 1926, by Thomas H. Reed, Director, Bureau of Government, University of Michigan

The Progress of City Planning Law During 1926, by Frank B. Williams, Esq.

Franchise Contract vs. the Police Power as a Mode of Utility Regulation, by Delos F. Wilcox, Ph.D.

Classification of Municipalities and Title of Chief Executive, by Katherine O'Shea McCarthy and Helene Horen Rogers, of the Legislative Reference Library, State of Wisconsin

The Progress of the City Manager Plan in 1926, by John G. Stutz, Executive Secretary, The International City Managers' Association

Asphaltic Pavements, by Hugh W. Skidmore, President, Association of Asphalt Paving Technologists

The History and Development of Thin Brick Pavements

Concrete Pavements for Cities, by H. Eltinge Breed, consulting engineer

Recent Developments in Street Traffic Relief and Control, by Miller McClintock, Director of the Albert Russel Erskine Bureau for Street Traffic Research, Harvard University

Experience with Diesel Engines in Municipal Power-Plants

Garbage, Ashes and Rubbish—Collection and Disposal, by Samuel A. Greeley, consulting engineer

The Selection and Operation of Motor Trucks for Municipal Service, by George P. Anderson, transportation engineer

Swimming Pools and Other Bathing Places

A new section under this title is given, which includes the Standards for Design, Construction, Equipment, and Operation recommended

by the Joint Committee on Bathing Places of the American Public Health Association and the Conference of State Sanitary Engineers, and also presents what is believed to be the most complete collection of swimming pool statistics ever secured.

Directories and Statistical Tables

New directories and statistical tables which have not appeared in previous volumes are:

Municipal Election and Budget Dates
Accounting Requirements under State Laws
Costs of City Government
Directory of City Managers
Mayors and Population Rank of Cities of 30,000 Population and Over
Street Cleaning and Snow Removal
Street and Highway Lighting
Chiefs of Police and Traffic Officers—Places Under 5,000
Traffic Officers—Places Over 5,000
Water-Supply
Sewers, Sewerage and Sewage Disposal
Fire Departments—Places Under 5,000 Population
Experience with Pavement Markings for Traffic Control
Automobile Fatalities for Five Years in 68 Cities

There are also included in the 1927 volume the following revisions of directories and tabulations previously published:

National Organizations Serving Municipalities
State and Provincial League of Municipalities
Local Civic-Commercial Organizations
Chiefs of Police—Places Over 5,000
Parks, Playgrounds and Public Recreation Facilities
Principal Causes of Death in the United States

Bibliographies and Condensed Catalogs

The bibliographies are the most comprehensive yet published in *The Municipal Index*, containing the most important books and pamphlets published since 1920 on the various subjects listed (and a few of earlier date on subjects not covered adequately in more recent works), together with the principal articles which appeared in THE AMERICAN CITY in 1926.

The lists of consultants and manufacturers are of great value to users of the volume. There is a list of 54 consulting engineers, city planners, landscape architects, and other consultants serving municipalities, and condensed catalogs of 260 manufacturers; the latter furnishing the most comprehensive source of information for buyers of equipment and supplies for municipalities and counties that has ever been available.

Single-Family Residence Districts Sustained by the Supreme Court of the United States

IN Beery v. Houghton, Inspector of Buildings for the city of Minneapolis, the Supreme Court of the United States has for the second time pronounced zoning to be a valid exercise of the police power. The Minneapolis ordinance, enacted under a state enabling act, created, among others, single-family residence districts. The plaintiff sought, and by the courts of Minnesota was denied the right, to erect a four-family apartment building in such a district.

In the Euclid Village case, the first in the United States Supreme Court arising under modern zoning practice, the Court emphatically endorsed the principle of police power zoning.* The question of the validity of the one-family residence district did not arise in that case, and the Court expressly stated that it did not pass upon it. The reasoning of the Court, however, made it plain that the judges regarded such zoning as legitimate. Evidently the Court in this Minneapolis case relies upon that reasoning, since it has sustained without written opinion, in judgment given March 21, the Minnesota decision in favor of such districts.

No victory could be more complete.

FRANK B. WILLIAMS.

* See THE AMERICAN CITY for December, 1926, page 771.

Fundamentals of Design to Create Beauty in Playgrounds

By Charles N. Lowrie
Landscape Architect, New York

SURELY there is need to give careful consideration to that phase of the playground subject which has to do with the appearance of things; for throughout the length and breadth of our land examples of forlorn and bedraggled play areas are much in evidence.

Many of the patrons of public playgrounds, as we all know, are housed in the poorer sections of our cities, often under conditions of extreme congestion and where little opportunity is offered for anything but the barest necessities of life. For such as these it would seem a godsend to create beautiful play areas and thus bring about a contact with more pleasing environments during their hours of relaxation.

Topography, or the Lay of the Land

Where a considerable area is available, especially in rural or suburban surroundings, there is much greater freedom of choice in the development of a design to produce pleasing landscape effects. In general, the logical method in laying out such property is to follow the principles of park treatment and put the emphasis on any interesting natural feature or features.

Thus, if there is available a wooded grove, a natural ledge, a rocky hillside, a distant view, a stream, or a bit of lowland easily convertible into a pond, it should be taken as a leading motive and point of emphasis. On the other hand, where the area is limited and surrounded by tenements or factories, the problem becomes more difficult—but never impossible. Here it is necessary to create interesting motives and, to this end, to introduce plantations of trees, shrubs, or vines.

In the case of level or uninteresting or small grounds, the plan will normally work out to best advantage if well-devised axes are adopted,

ONE OF THE WELL-PLANTED WALKS IN HOBOKEN PARK, HOBOKEN, N. J., WITH A PLEASING VISTA

longitudinal, transverse, and secondary. Frequently a central architectural motive by way of an interesting building, well-designed architecturally and well-suited practically to the purposes and uses of the property, will help; or a flagpole with a handsome base and surrounding seats in the form of a little plaza with trees and hedging, or a music pavilion and a grove. Where space permits, a building should be placed centrally on the property, or near the main approach highway or abutting streets, whence it will serve as a point of distribution to all subdivided play areas.

Definite Areas for Different Purposes

In any well-arranged design, the desirability of assigning definite areas to the different purposes is a governing consideration. The large and medium-sized playground will afford sufficient area to accommodate the recreation needs of all ages, but each kind of activity should have its own definite location; for the older people, quiet groves with ample shade, and plenty of gravel space near by for little children; for small children up to the age of twelve years, an area devoted to the ordinary playground apparatus, with slides, swings, sandpiles, etc., and adequate shelter in a simple building, also with an abundance of overhanging shade trees; for boys and girls in their teens, another and larger space assigned to athletic fields, with provision for basket-ball, tennis, playground baseball, etc., there being separate areas in each case for the boys and the girls; and for every one a band-stand and a music plaza. All of these should have an ample setting of foliage in borders, and should be properly related the one to the other by connecting paths, and separated by interior fencing.

For all ages, water facilities are most desirable. The little people are content with a very shallow wading pool, and all the other ages with properly equipped swimming pools and bathing pavilions. Furthermore, these features are easily made pleasing in appearance by means of vine-clad walls and fences around the enclosures.

Roads, Paths and Surface Material

Normally, the less roadway space in the limited areas available in playgrounds, the better. If parking space is needed, it is much better to use widened side streets or parking places outside the actual playground, thus eliminating for the time the traffic evil. With paths, it is better to err on the side of too much width rather than too little. Such paths become available for park settees for mothers and babies, as well as passageways to the other playground facilities. A differentiation should be made between paths that are principally thoroughfares or passageways and those that are secondary or side paths, though the latter may perform both functions. Secondary paths in many cases may broaden out into wide graveled spaces. All paths should be lined with overhanging trees.

In the larger semi-rural playgrounds it is feasible to have grass as the predominating surface material. In the medium-sized playgrounds gravel and grass should be of about equal area. In the smaller city playgrounds grass will probably be eliminated altogether, but even in the most confined and congested areas it is feasible to have a reasonable number of trees with narrow borders of earth available for hedging, and vines around all outside boundaries. Such trees will need tree-guards much like those on city streets. A sun-flecked gravel space may be very satisfying in appearance; witness the Tuileries Gardens.

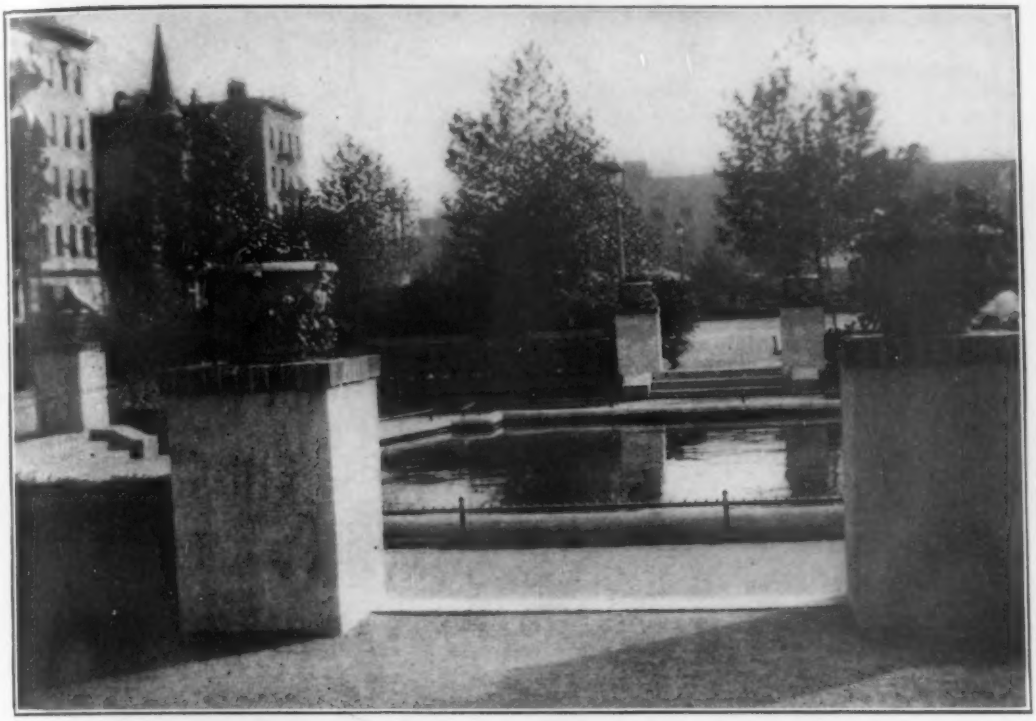
Planning a Hypothetical Playground

In order to be specific let us plan a tract of ground rectangular in shape in a crowded neighborhood of a few acres, say not more than five or ten, for actual playground purposes. Let us assume a frontage on a more or less important street, the other three sides being bounded by factories and cheap residences.

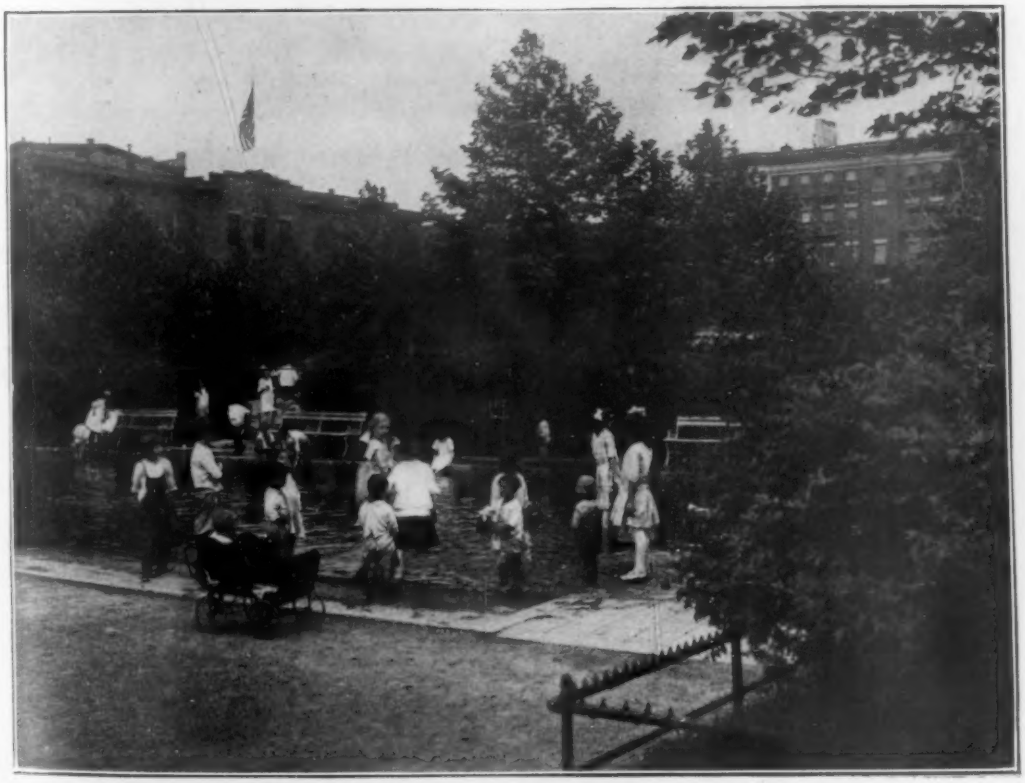
The first consideration would seem to be to construct a neat but strong iron picket fence on the street front, with one or two entrances, and to enclose the other three sides bounded by buildings with a heavy wire-mesh fence. Thus we have one or two points only for entrance and egress, which condition will be a great aid in the future control of the public.

A central axis may lead back a few feet or yards to a field house. The area between the entrance and the field house, in extreme congestion, would probably be gravel, or a simple strip of depressed lawn, or a water feature in the form of a lagoon, reflecting an interesting detail of the building, and perhaps sunken somewhat below the general level. On either side there may be arranged small areas in the form of groves of trees. Here, again, the surface will probably be gravel with a narrow border for trees, hedges, or free-growing shrubbery, or in any case for vines on the wire-mesh fence to make green hedge-like boundaries instead of bare brick.

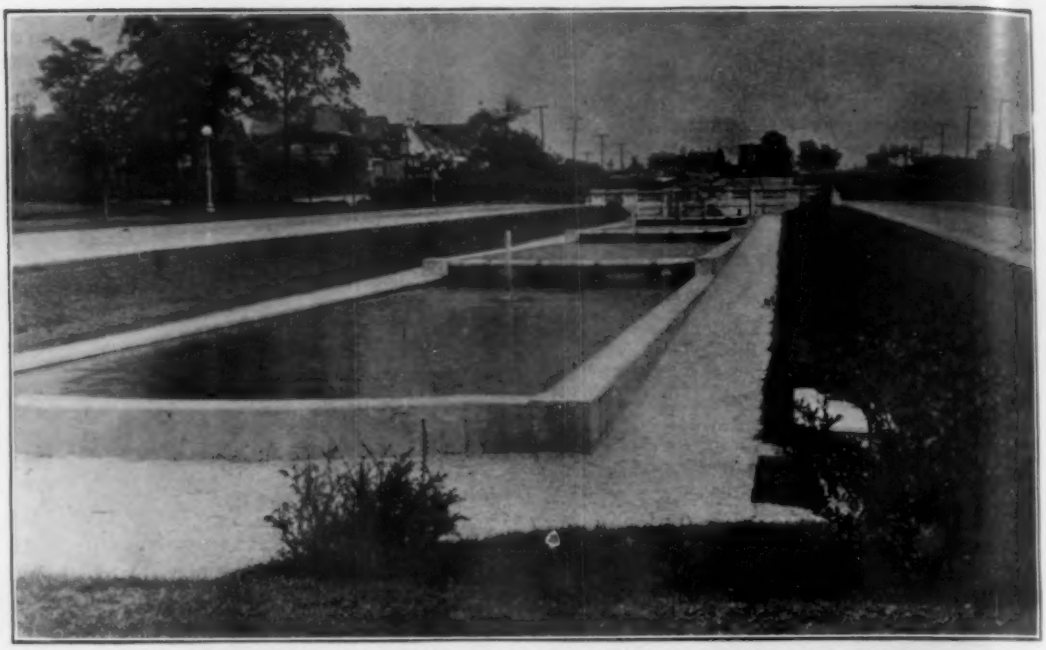
The central building in the smallest areas should have a combination character, supplying



LOOKING ACROSS THE LAGOON IN HOBOKEN PARK PLAYGROUND



WADING POOL IN HOBOKEN PARK



LOOKING ALONG THE LAGOON IN BAYONNE PARK, HUDSON COUNTY, N. J.

practically all the facilities which playground buildings should include—an open shelter, a superintendent's office, a music pavilion, toilet facilities, and storage space for tools and apparatus, including a shop for repair work. If the area is larger and funds are available, it would be better to provide a separate building for a bath-house with the adjoining pool, also for public comfort facilities. The remainder of the ground would normally be subdivided by means of interior fences, with entrances at one or two points only.

These areas would be the playgrounds proper and, as already suggested, need not be barren, sun-baked spaces, but may just as well be shaded, the only condition being that the trees

WADING POOL IN BAYONNE PARK

should have good soil, while of course the area for play would be gravel. In like manner, an area for tennis courts would be surrounded by fencing which would afford back-stops as well as protection. Another area for outdoor gymnasium facilities for older boys and older girls would be similarly fenced in, with one or two means of access; and finally, there would be an athletic field, preferably sunken, so that it could be flooded for skating.

All these areas should take the form of groves of trees properly protected, except the tennis court area and athletic field. All of them will normally have broad paths around them and, except in extremely limited playgrounds, all of them should have a narrow strip between the paths and the recreation areas in which are shrubbery, hedging, vines on fencing, or avenues of trees.

A good design may be 90 per cent gravel and yet give the general aspect of a parklike place, quite secluded from the surrounding buildings and from the outlooks, which are normally uninteresting if not ugly.

FLAGPOLE IN HOBOKEN PARK PLAYGROUND

Maintenance

In my experience the two governing conditions for a successful, good-looking playground are, first, a suitable design well and substantially executed, and, second, efficient control. The one supplements the other, but it is obvious that the most fool-proof layout will not stand up under heavy intensive use without some continuous control.

In this connection, it is quite remarkable to observe the sense of pride which soon develops in the users of a playground which is well kept. An extremely small—but not to be ignored—percentage of the population will abuse any facilities if given the opportunity. On the other hand, a small amount of restraint, if one means business, especially at the beginning of the spring season, will put the unruly on warning, and the rest will by common consent take a pride in seeing that their playground is well kept and attractive at all times.

ACKNOWLEDGMENT.—From a paper read before the National Playground Congress, held by the Playground and Recreation Association of America at Atlantic City, October, 1926. The illustrations, and the one on the front cover, give interesting examples of the work of the Hudson County [N. J.] Park Commission.

Have Municipal Salaries Kept Pace with Increased Living Costs?

IN the opinion of the National Industrial Conference Board of New York, in a statement made public on March 7, 1927, the purchasing power of the dollar has become practically stabilized at a value of about 60 cents, as compared with the pre-war dollar. This means that unless the earnings of municipal and other employees are at least 66 per cent higher than in 1914, a standard of living equivalent to the pre-war days cannot generally be maintained.

The Conference Board's statement says in part:

"The purchasing value of the dollar, as measured by living costs for the American wage-earner or other people of moderate means, has fluctuated little more than 5 per cent, or only about "a nickel" in case of a dollar purchase during the past five years. The dollar now is worth, on the basis of living costs, just about 60 cents, as compared with the pre-war (1914) dollar, and, having fluctuated less than 5 cents either way from this value since 1921, may be considered as having become stabilized at this level, as contrasted with the severe fluctuations of the first few years after the war.

"Average living costs as computed by the Conference Board during the year 1926 were slightly (1.8 per cent) lower than in 1925, but in January, 1927, were still 66 per cent higher than in 1914, just before the war. Average weekly wage earnings at the beginning of the current year, however, were 116 per cent higher than, or more than double, what they had been in 1914, leaving the wage-earner 28 per cent better off than he had been before the war as regards the purchasing power of his weekly pay."

Financing, Rental, and Amortization of Private Sewerage System, Troy, Pa.

By Henry W. Taylor
Consulting Engineer, New York

MUNICIPAL and state laws provide for the financing of municipal sewerage systems as well as those of sewer or drainage districts. Sewerage facilities are also supplied by business corporations, organized for profit.

There still remains the case which is frequently encountered and may be described as follows: An incorporated community has no margin of bonded indebtedness to furnish funds for sewerage construction. On the other hand, the individuals of this community can well afford to finance and support a sewerage system. The system is urgently needed and may be demanded by state authorities, but the amount of revenue that could be obtained from the community for sewerage service at reasonable rates is not attractive to a sewerage company operated for profit. Furthermore, the only practicable method of operating such a system on any business basis requires that its care and operation be assumed by municipal agents, who can do this work in connection with other duties at no additional expense to the community.

It is the purpose of this paper to outline, in the main, the handling of such a situation as has been described, at Troy, Pa. The borough of Troy, in Bradford County, had in 1913 a population of 1,300 people. There were about sixty privately owned sewers discharging into Sugar Creek, which unfortunately flowed through the heart of the developed area of the corporation. In addition to domestic sewage, the wastes from a tannery and a condensery complicated the situation. The need of sewers was felt by the community and emphasized by the State Department of Health, and the discontinuance of existing sewer outlets was under consideration. Construction by the borough was legally impossible.

A Community Sewerage System

The community, however, could well afford the system required to save their sanitary facilities and was willing to supply the funds for its installation and pay rental for its use, and a group of business men undertook to work with the Engineer to formulate a scheme and a procedure which would be legally sound and practicable from a business point of view, eliminating both the element of risk and of profit, and including security of capital investment. The resulting system should more properly be called a "community sewerage system" than a "private sewer system," as will be indicated by the formulation and operation of the plan. The first move made included a reconnoissance survey and the preparation of a preliminary plan of a tentative layout for the system, defining the limits of purification to be provided, together with an estimate of cost. These plans were presented to and approved by the State Department of Health. The estimate indicated the funds that must be subscribed and the rentals that must be obtained to support the project. A list of subscribers was obtained from members of the community and also a list of those who would pay for the use of the system when constructed. Thus far, the cooperation of the state was obtained, the limits of expenditure were defined, the willingness of subscribers to contribute the necessary money was guaranteed, and interest on the money and overhead charges, together with a gradual amortization of the investment, were covered by the pledges of prospective users of the system. The next step included the formulation of the scheme in due legal form, the principal features of which may be briefly stated.

The subscribers bound themselves by agreement with one of their number, called the trustee, to furnish money for construction and place these funds in the hands of the trustee under certain conditions. The trustee simultaneously made contract with the borough for the leasing of the system by the borough under certain conditions, and the individual contracted with the borough to pay rental for use of the system. The contracts between the trustee and the subscriber, and the trustee and the borough are very similar in statement of conditions, and the two may be summarized together, as the latter contract rehearses the former.

The subscriber gave to the trustee by contract certain clearly defined power, instructions, and responsibility. He was to construct a sewerage system with their money, lease it to the borough at an annual rental equal to 5 per cent of its cost, the borough to maintain the system, collect rents from individuals for its use, and apply surplus revenues to the purchase of the system. All revenues collected by the borough

for the use of the sewers by the individual were to be kept in a separate account and this money used only for repairs, maintainance, damages, and rent payment to the trustee, or to apply on the option of the borough to buy the property and itself supplant the original investors.

The trustee was ordered to install lateral sewers on streets where sufficient users could be found to contribute rentals for such sewers amounting to 7½ per cent of its separate cost. It happened that the main body of users of the sewer were located adjacent to the trunk sewer, and the above condition limited the amount of lateral extensions permitted by the investors.

The Borough's Obligation

The borough is obligated to lease the system until such time as it becomes sole owner of the plant. The borough is required to operate and maintain the sewerage system, collect all rentals from individuals, and pay all taxes, and is liable for any damages from poor management or care of the property.

Each investor held a formal certificate of his interest in the property, and the borough had the right to buy any certificates offered for sale, or to decide by lot which certificate it would buy in whole or in part.

The trustee was given the right to borrow money, if needed, for original or future construction, as demand might increase. In the matters of construction the trustee worked with a construction committee consisting of one subscriber and one member appointed by the Borough Council. Extensions must be approved by this committee. The trustee was required to keep accurate books of all subscriptions, expenditures, rental receipts, and so forth, and the borough contract calls for an audit of these books at the completion of construction, to establish beyond any doubt the construction costs, upon which the yearly rental of the system is based. At the completion of the construction the Engineer submitted to the trustee and to the borough a complete file for all important correspondence, all orders, agreements, payments authorized, interim reports and statements, with a detailed statement of all costs, and a list of every check issued by the trustee, and the purpose of each check was indicated by an order, stating material or labor involved. This file was audited by the trustee, the construction committee, and an auditor appointed by the Borough Council, and the stated cost was registered as the amount upon which the 5 per cent should be paid for the use of the system.

The borough contract rehearses the subscriber contract and adds only the element of audit and grants street franchises to the trustee for sewer purposes.

The sewerage system was constructed in 1915. It was turned over to the borough, which has operated it in connection with the borough water-supply system, the water superintendent being also the sewer superintendent, and the rates for sewer rental being the same as the amount paid for the use of water. The water rates are very low in amount and the sewer rentals are correspondingly low. However, the borough has paid off about 20 per cent of the total cost of the system and has maintained the interest, maintenance, and repair payments.

I doubt if the borough has any present intention of hurrying to bond itself to obtain complete possession of the plant, even if it were financially possible. There is no limit to the time allowed the borough to completely execute its option to purchase, which seems casual enough, except as one realizes that the whole matter is a community affair, the necessary facilities are at hand, the investor receives a meagre 5 per cent on his money and is content with the value of his certificate of interest in the plant and his good-will to the community. As a community project, the Troy sewerage system has proved a success to the four interested parties, namely, the subscriber, the trustee, the borough, and the user of the facilities offered.

I consider the work of the attorney in the matter of unusual quality and the agreements simple, clear, and binding. This attorney has since accomplished similar feats for Troy for other than sewerage facilities and has worked on the plan of a non-profit-making corporation, issuing bonds to obtain funds and eliminating the trustee.

The scheme might be subject to criticism as a means of selling a borough a sewerage system on the installment plan, except that the borough is in no way obligated for payments in excess of its collected rentals from the individual, the exercise of its option has no time limitation, and costs are actual costs without profit, and subject to audit by the borough.

A considerable amount of detail can be supplied, such as copies of agreements, yearly receipts, costs of maintenance, payments on account of option, handling of work during construction, and so forth, and this additional matter will gladly be furnished to any readers of THE AMERICAN CITY who may be interested.

ACKNOWLEDGMENT.—From a paper read before the American Society for Municipal Improvements, at Washington, D. C.

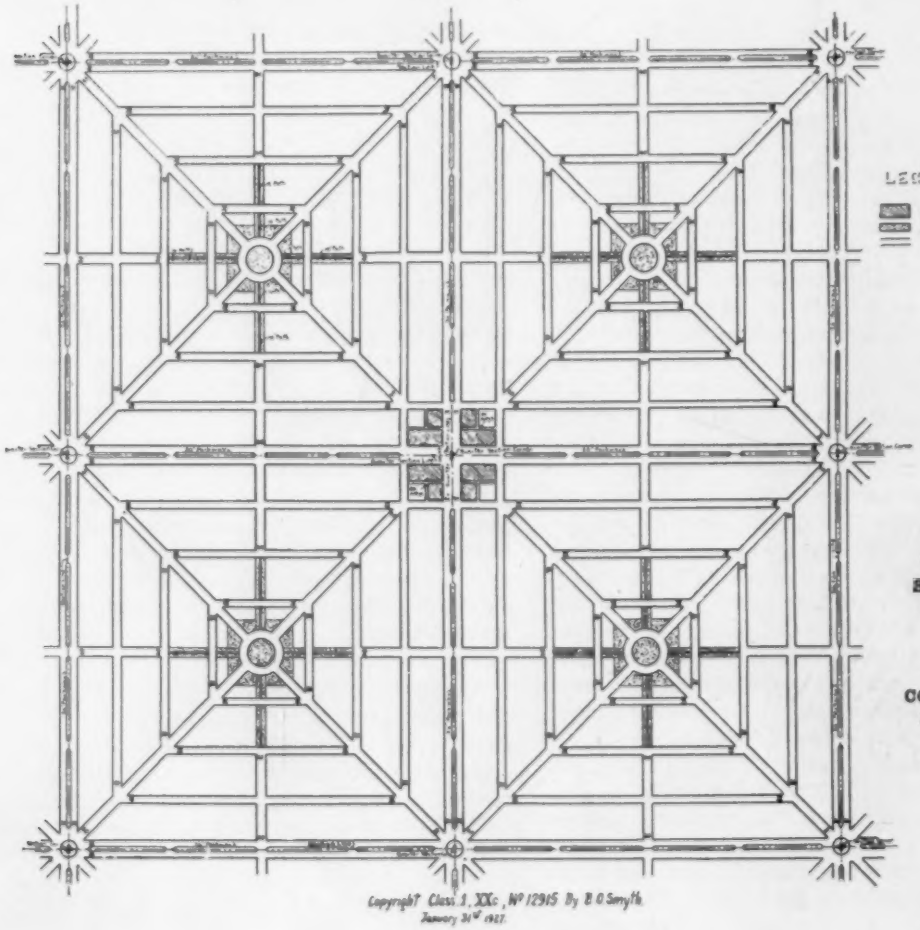
"Concentric Squares" as a Basis for Planning Residential Districts

By B. O. Smyth

City Planning Board Engineer, West Palm Beach, Fla.

MODERN city planning depends largely on zoning, and therefore in working on a layout for a city plan each zone will in a general way be dealt with as a separate unit. The residential zone should comprise by far the largest area of a city; accordingly, this layout study is based on the modern requirements of a residential district.

At the present time a practically universal form of city plan consists of the rectangular or gridiron plan, the result of primitive two-dimension thinking, permitting movement in merely two directions, thus opposing the long way round on two sides of a triangle to the cross-country route which is the tendency of the vast majority of travel. The greatly increased height of modern buildings, in many cases out of all proportion to the width of channels of communication they flank and the speed of modern street traffic, has been the cause of most serious congestion; hence the necessity of a third dimension permitting volume, and a fourth permitting a saving of time, have become apparent. The third dimension, volume, is introduced by systematic street widening and does not of necessity call for a radical change of plan; but the fourth dimension, time, a combination of the factors distance, speed, and safety, presents a more complicated problem.



A TYPICAL SECTIONAL LAYOUT ON THE BASIS OF CONCENTRIC SQUARES

Copyright Class J, XXc, No 12915 By B.O.Smyth
January 31st 1927

Adding Diagonal Streets and Reducing Street Junctions

The resultant of two forces acting along two sides of a square or rectangle is the force acting along the diagonal of such square or rectangle, and, similarly, the resultant direction of travel around two sides of a square or rectangle would be travel along the diagonal of such square or rectangle. An economical introduction of diagonal streets to meet the requirements of the first factor, a reduction of distance, will be the first step, and a reduction of the number of street junctions and intersections to meet the requirements of the remaining factors of speed and safety will be the second step to be obtained in order to meet the necessity of the fourth dimension, time.

Now, the introduction of diagonal streets into the gridiron system, in sufficient numbers, would so increase the cost of street paving and cut down the land available for other purposes, that with such corresponding increase in taxation and the price of land, the proposition would become economically unsound. Furthermore, diagonals thus introduced would materially increase the number of street intersections, thus diminishing the factors of safety and speed. From these deductions alone it would appear that the rectangular block or gridiron system is totally unsuited to modern conditions.

In prospecting for another form of layout which will obtain the desired results, it must be kept in mind that in a great majority of cases land is held in ownership within the bounds of Government subdivision lines, that is, by the section of approximately one square mile or regular fraction thereof. In order, therefore, to meet all contingencies of owner development down to a minimum of a five-acre tract, blocks must in general follow the direction of Government subdivision lines, with the center lines of their flanking streets coincident with such subdivision lines.

The most symmetrical and therefore in all probability the most economical means of meeting the diagonal requirement and in addition increasing the factors of speed and safety, under conditions referred to in the preceding paragraph, is by a system to be termed "The System of Concentric Squares." It is generally conceded that a quarter-section of approximately 160 acres is an ideal unit of subdivision; accordingly, "The System of Concentric Squares" is based on such a unit for purposes of illustration, but may be modified to meet other units of development.

Referring to the accompanying Typical Sectional Layout, it will be seen that the fundamental principle of this system is a series of squares within squares, with one common center for each unit of subdivision, in this case the quarter-section. The sides of each square form a street system the center lines of which coincide with Government subdivision lines. Two diagonal interceptors connect each system, passing through the four corners of each square. The longer blocks have been split by the introduction of terminal streets on 40-acre lines.

A Comparison with the Rectangular Block Plan

Comparing this layout with that of a similar area on the rectangular block plan, to which are added but two diagonal streets, the following comparisons are noted:

CONCENTRIC SQUARES

Streets
Paving = 27.76 miles (approximate only)
Junctions, 48
Intersections, 88

RECTANGULAR BLOCKS

Streets
Paving = 30.96 miles (approximate only)
Junctions, 76
Intersections, 124

The saving effected in the cost of streets and sidewalks alone is about $316,800 for each square mile of residential city area, and approximately 19 additional acres per square mile are liberated for other purposes. The number of street junctions and intersections has been reduced materially, thus increasing the factor of safety and enabling the speed of traffic to be increased correspondingly. In addition, residential districts lying between main thoroughfares and diagonals have been completely segregated from through traffic, a most desirable feature both from the point of view of elimination of noise and of provision of additional safety for residents.

Local Business District and Recreation Grounds

It will be noted that a small business district has been located about the center of each section, to provide local service for the surrounding residential zones, and that at these points the diagonals by-pass the intersection of main thoroughfares on parallel streets, thus serving a dual purpose—the elimination of a multiple street intersection within a business area and the completion of stretches of almost a mile of two secondary streets paralleling such thoroughfares, so allowing for a means of diversion of purely local traffic.

Public recreating grounds have been placed in direct alignment with terminal streets on 40-acre lines and these grounds may be so dedicated as to allow of their use for the extension of such streets, should the existing channels of communication need augmenting at any time.

As regards areas allotted for public recreation, attention is drawn to the fact that these are by no means adequate to meet modern requirements; but half a loaf is better than no bread, and since at the present time, it rests with the developer as to how much land, if any, he will donate for this purpose, it may be better policy not to ask much until such time as public opinion has been educated up to the standard of modern requirements.

Opening Up a Congested District in Manhattan

THE pressing subject of improving living conditions in the congested districts of the city of New York has for some years had the special interest and study of Julius Miller, President of the borough of Manhattan. More than a year ago President Miller began a practical application of his views by proposing an oasis in the midst of one of the most thickly populated sections of the lower East Side. Allen Street today is about 50 feet wide, and through its center passes the structure of the Second Avenue Elevated Railway —rather more than 30 feet wide, overhanging both sidewalks and projecting above the second-story windows of the dwellings on either side. These are mainly five- and six-story "old law" tenements and even without the railroad structure would obstruct most of the light and air, but with it leave a dark and damp street which is the only playground for the children, besides being a busy thoroughfare and market-place for the small stores and push-cart traders.

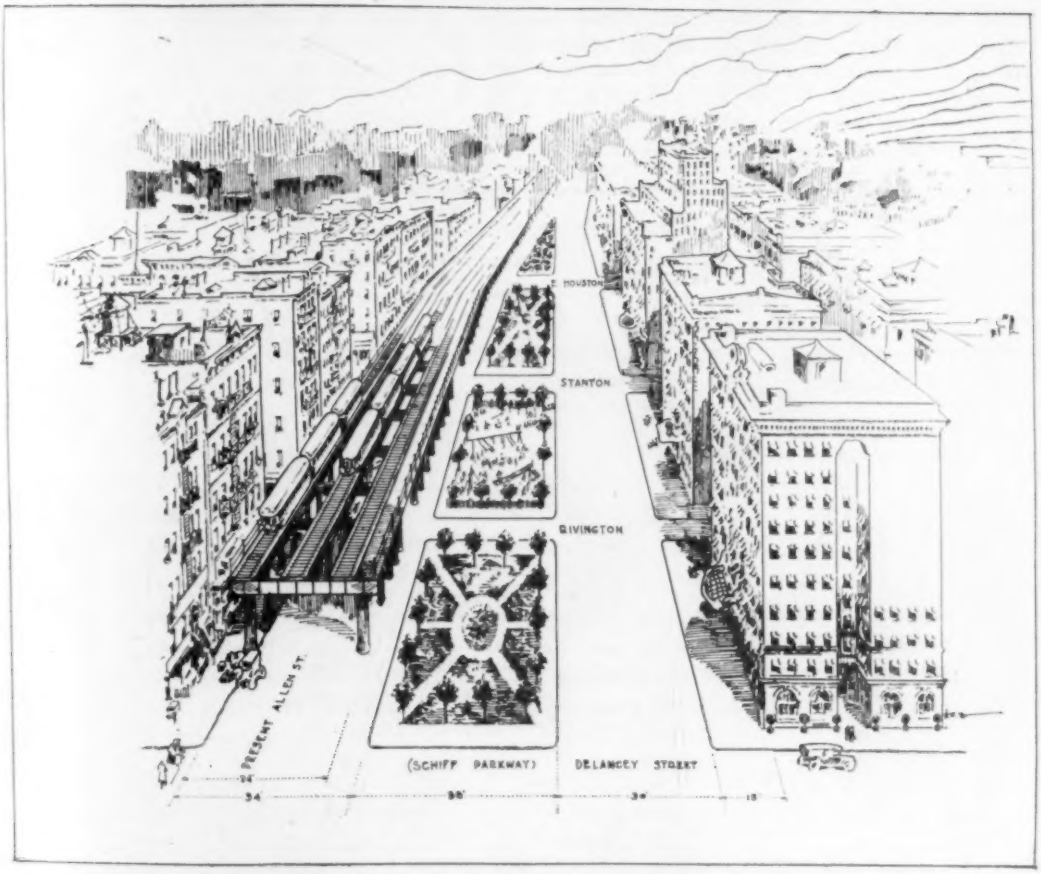
This dismal locality it is intended to change into a spacious boulevard with two additional roadways, together 40 feet wide, while between them will be a park and playground space 38 feet wide, alternate blocks being provided with benches under trees or shrubbery for the older folks, while between them open playgrounds a block long, protected from street traffic, will be arranged for children. On the eastern side of the new roadway will be a sidewalk 15 feet wide, making this new street 138 feet wide over-all. The effect on the street will be in the nature of a transformation. Where at present the full daylight never enters, where children and grown-ups dodge between vehicles and push-carts in the shadows of the railroad structure to their daily avocations and schools, will be a wide stretch of sunlight, clean play spaces, and even green grass and shrubbery. Even the sparrows will sing melodiously to the population of 50,000 that today exists within an area of 500 feet from the lines of this wonderwork.

All this will be accomplished by taking down one row of the existing old buildings on the easterly side of the street between Houston and Delancey Streets, and it is hoped the change will extend down to East Broadway five blocks below. Such an extension would be a beginning of the end of congestion in an area where there are blocks 175 feet by 400, that house a population of about 3,000 each.

But there is still another advantage which such a change would bring to the city at large. First Avenue, which extends 6½ miles north to the Harlem River, where it meets the important Willis Avenue Bridge, now ends abruptly at Houston Street. The widening of Allen Street would give direct access to the traffic on First Avenue to the lower part of the city and connect with the City Hall and lower Broadway. It would make the newly paved First Avenue an additional traffic thoroughfare from the City Hall and the lower end of the borough to the Harlem River and would aid in the rapid development of a section that has long been stagnant, would increase property values along the whole length, and in a relatively short time would more than repay the cost of the new street opening—and what is equally important, greatly relieve the other congested north-and-south avenues.

This is true even of the short piece—from Houston to Delancey Street—now under way, which will connect First Avenue with the great Williamsburg Bridge over the East River, so that it will be not only a benefit to a densely congested population, but a definite part of a carefully studied traffic relief plan which Mr. Miller has been carrying out for four years. Contracts for the work of grading, paving, and developing have been advertised, the title of the property to be taken is in the city, and it is expected that the Houston-Delancey Street section will be completed this year.

TODAY SUNSHINE HASN'T A SQUARE DEAL IN ALLEN STREET



THE FUTURE ALLEN STREET WILL HAVE AMPLE SUNLIGHT, CLEAN PLAY SPACES, AND EVEN GRASS AND SHRUBBERY

Controlling Contract Work on City Streets

By J. H. Neeson

Chief, Bureau of Highways, Department of Public Works, Philadelphia

THE city of Philadelphia embraces over 129 square miles of territory and contains 1,386 miles of street paving of various types, including stone, brick and wood block and sheet asphalt, with 560 miles of improved and dirt roads in the suburban and extreme outlying sections. The function of construction and maintenance is delegated to the Bureau of Highways, which has subdivided the city into six districts, each with an individual engineering and supervising force, operating under the jurisdiction of the central office. The construction units, employed mainly on grading, paving, repaving, plain and reinforced concrete and bituminous road projects, have been extremely active during the past six years as a result of the enforced neglect of streets and roads incident to the war period and the vast amount of building development subsequent thereto. In the years referred to, the Bureau has constructed a total of 507 miles of the different classes of work enumerated at a total cost of $34,857,754. It is evident, therefore, that a comprehensive, compact, and visible record of work status and performance must be available at all times to ascertain the exact history of any one or all of the various projects under way.

For this purpose, a horizontal visible index system, selected because of ease of operation and minimum space requirements, has been installed for a number of years in the central office with most satisfying results. It is granted that the information most essential to the head of a highway organization is that which gives facts at a glance concerning day-to-day development of construction work under his control. The system in use in Philadelphia produces such data and is almost automatic in operation.

The following description briefly visualizes the general method of procedure of each piece of work from its inception until final completion and acceptance.

The history of each authorized improvement

BUREAU OF HIGHWAYS
DEPT. OF PUBLIC WORKS
CITY OF PHILADELPHIA

PAVING, HIGHWAYS PROGRESS RECORD

PROPOSED IMPROVEMENT		RELEASES		CONTRACT		PAYMENTS			
ROADWAY	ASPHALT	GAS	6-4-26	ORDINANCE	1-4-26 3-19-26	AMT. OF CONT.	7,500.00		
GUTTERS	VIT. BLOCK	SEWERS	2-5-26	ADVERTISED	5-8-26	CITY LIABILITY	1,000.00		
TRACK AREA	NONE	LATERALS	2-5-26	BIDS REC'D	5-18-26	ASSESSABLE	6,500.00		
		WATER	5-29-26	AWARDED	5-19-26	EST.	AMOUNT		% PAID
		LIGHTING	7-10-26	CONTRACTOR	EASTERN ASP. CO.	1	928	60	100
		CURB	5-3-26	EXEC. BY CONT.	5-28-26	FIRST AND FINAL ESTIMATE			
		B.T. Co.	5-27-26	CERTIFIED	6-8-26	OF CITY LIABILITY.			
		P.E. Co.	O.K.	NOTICE PROCEED	6-11-26				
		P.R.T. Co.	O.K.	WORK BEGAN	6-22-26				
				WORK FINISHED	7-26-26				

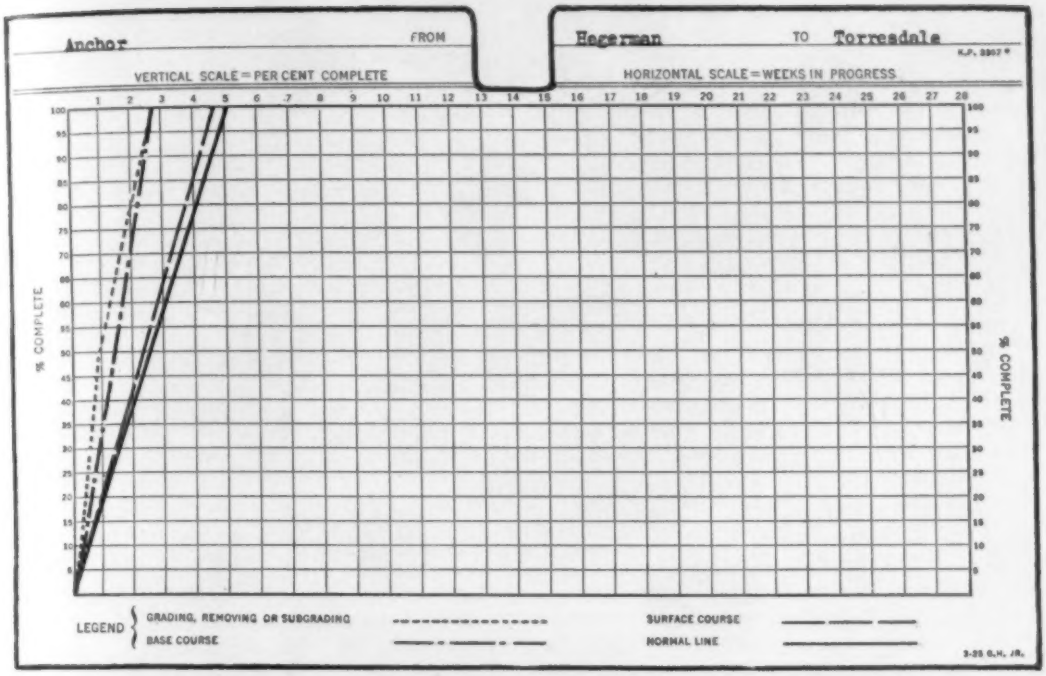
This contract also includes
Carver, Hegerman to Torresdale Ave.
Curb set O.K.

TIME ALLOWED	30 DAYS
TIME CONSUMED	26 DAYS.
DELAY	NONE
SURVEY DIST.	14
WARD	41

GROUP 4 | ADV. | S.R. | AWD. | EX. | CERT. | N.P. | W.O. | M.P. | HIGHWAYS 1 2 3 5 6 0 | COUN. DIST. 1 2 3 4 5 6 7 0

Anchor FROM Hegerman TO Torresdale Ave.

CARD RECORD OF PAVING AS USED BY THE BUREAU OF HIGHWAYS, PHILADELPHIA
Cards for grading and repaving are similar in form, but vary in color for purposes of identification



TYPE OF CARD USED TO SHOW PROGRESS OF WORK ON PAVING JOB IN PHILADELPHIA
For reproduction, the legend has been altered. The dotted line for grading, removing, or subgrading represents green; the dashes represent blue; the dot-and-dash line, red; and the solid line, black

is maintained on two cards, designated as progress record cards and progress work cards, utilizing, as already stated, a horizontal visible index system. All cards are colored—yellow for grading, white for paving, blue for repaving, and salmon for country road improvement. Both record and work cards are the same dimensions, 5 by 8 inches, ruled and printed on one side only. They are set up in the index file simultaneously. The record card gives the date of the ordinance authorizing the work; type of proposed improvement; information pertaining to releases from municipal bureaus and public service corporations; dates of advertisement and receipt of bids; the limit of the contract in money; amounts of estimates paid; etc. The work card assumes a little different form, being ruled both vertically and horizontally. The vertical is inked to show the percentage of work completed; the horizontal scale showing the number of weeks in progress. Green ink is used to indicate grading; red ink, base course; and blue ink, surface course. When a contract has been awarded, the time allowed for the completion of the project is shown on this work card by ruling a straight black line from the bottom of the card at the left, starting at zero, to the top of the card, scaled in weekly periods.

The successful operation of the system is predicated, once the work is started, on information received from the inspectors assigned to the construction contract. This takes the form of a daily report card, which is an ordinary postal card printed and ruled on one side, with spaces allotted for such detailed information as the amount of forces and equipment at work, and shows the quantity and character of work performed the day the report is forwarded, for example, subgrading, base course, surface course, etc. Weather conditions and percentage of work done to date are also shown on this card, which the inspector likewise lists in the proper spaces. He signs the postal card and mails it to the central office every evening.

To illustrate, we shall take an original paving operation. As already stated, authorization for any improvement must first be made by City Council, and when a copy of the ordinance has been received in the Bureau of Highways, the white card used for the purpose is immediately typed and the date of the ordinance placed thereon. When plans and specifications have been prepared, proposals are solicited by public advertisement, the law in Philadelphia requiring ten daily insertions. The dates of the first insertion of the advertisement, receipt of bids, and award of contract are then in sequence recorded on the progress record card in the spaces allotted. The name of the contractor to

whom the award has been made, date of execution of the contract, and date of certification of the contract by the City Controller, follow in logical order.

Before the notice is given to the contractor to proceed with the work and the date is inserted on the card, it is essential that all subsurface structures and connections such as sewers, water and gas mains and laterals be installed, replaced, or repaired. It is equally important that the public service corporations, such as the telephone and electric companies, have placed in the street all necessary conduit, cables, and wires, not only for immediate requirements but anticipating extensions of service for a period of at least five years. The city itself must also have placed its poles for lighting purposes or have anticipated this service by providing the necessary underground connections to the point of location. This is what is familiarly termed as "clearing the record," and when such information is received from the various city bureaus and all public service corporations, notice is given to the contractor to proceed with the paving. These different release dates are entered on the card, as well as those showing dates of beginning and completion of the work.

Upon receipt of this notice in the particular district in which this work is to be undertaken, the inspector assigned sends in a daily report card on postal form, beginning with the day the contractor starts the work, and continuing each day thereafter until final completion. The clerk in the central office in responsible charge of the transferring of these data to the record and work cards, rules in the information received in varied colored inks with a drawing-pen, thus visualizing the progress of each particular job.

The system requires constant attention and care in transmission of the records, and only one experienced clerk is assigned to the task and held responsible for its correct maintenance. When followed up unremittingly and accurately, the results are gratifying and show at any time the exact status of any highway improvement, from its introduction as an ordinance in City Council until its final completion and payment.

In the year 1926, 843 contracts were handled by the Bureau and every essential piece of information was contained in a steel filing cabinet 10½ x 25¼ x 24 inches in dimensions.

The system is not a strain on the eye, as the colors of the cards show the character of work, and the varied colored inks the progress and the percentage completed. The alphabetical arrangement of cards in horizontal visible index has been found preferable to the vertical system, which requires a greater amount of manipulation. The releasing of a shallow drawer and the turning over of one flap bares both the progress card and the work card, much in the same manner as opening the leaves of a book. The information is complete and tersely shown, and without the consultation of various records filed elsewhere a full history of any project in question is adequately presented.

The County as a Unit for an Organized Program of Child-Caring and Protective Work

COUNTY-WIDE programs of social work reaching children living in isolated rural districts as well as city children have been developed in 18 states, according to a recent report of the United States Children's Bureau. This report, written by Emma O. Lundberg, describes briefly the forms of organization and types of activities for the protection of children carried on in these states under the authority of special legislation or through the efforts of state agencies

Although different methods are in use in different states, four general types of county organization are becoming evident. These are: A broad program of public welfare and child-welfare work done on a state-wide plan, found in North Carolina, Minnesota, Missouri, Virginia, and Alabama; a program of social work, promoted by the state department of welfare, but not according to a state-wide plan, in California, Georgia, North Dakota, Pennsylvania, South Dakota, and West Virginia; the "Iowa plan," which is a coordination of public and private relief promoted by a state body; and the type, found in Arizona, Arkansas, Indiana, Michigan, New York, and Ohio, which covers care and supervision of dependent, neglected, delinquent, or defective children, with or without the cooperation of the state department.

It has been demonstrated that the cost of administration of county organization is more than compensated for by savings in poor relief or other expenditures that had been administered wastefully under the old system. The saving in other ways is demonstrated less easily, but is far more important. Children who are kept in their own homes through assistance to the family, instead of being removed to institutional or agency care; families that are helped to maintain a normal home; boys and girls who are saved from commitment to institutions for delinquents and given real probationary supervision; children who are removed from surroundings that are injuring them physically or morally; crippled children for whom hospital or clinical treatment is arranged; constructive service in a multitude of conditions—these are the real criteria of the value of making this service available to remote rural sections as well as to the cities.

Some Effects of Prohibition, as Seen by Fifty Mayors

SO much of the sensational side of the Prohibition question is played up in the press, and so partisan are many of the more serious treatments purporting to be impartial and scientific studies, that the mass of information published is becoming more bewildering than enlightening. As an aid to clarifying public opinion, THE AMERICAN CITY decided to make a survey of this vexed subject, and mailed questionnaires to a representative list of mayors of small cities, soliciting information on certain specific aspects of special interest to municipal officials. What was requested was not so much their views as their impartial observations.

At the time of going to press, fifty mayors in places of from 10,000 to 40,000 population were good enough to reply.* As a result, a significant consensus of informed opinion has been obtained. Later issues may include further observations on this subject by mayors who send in belated answers. In presenting the results of this inquiry, THE AMERICAN CITY is, however, under no illusion that it has secured a final or exhaustive survey. All it has attempted at this time is to initiate a sort of round-table conference, in print, at which certain aspects on which information seems to be lacking may be informally discussed by those in a particularly good position to know the facts.

The Small Cities Will Decide the Fate of the Eighteenth Amendment

In the belief that public opinion in the small cities rather than in the great metropolitan centers will determine the ultimate fate of Prohibition by constitution and statute in America, the survey summarized in the accompanying article has been confined to places of from 10,000 to 50,000 population. In the belief also that no attempt to overthrow the Eighteenth Amendment can succeed without at least an overwhelming sentiment for such overthrow in states not previously dry of their own choice, the inquiry was confined to the fifteen states which did not have state-wide Prohibition up to the time that war-time Prohibition went into effect. Cities in "wet" states which had had Prohibition under local option were not excluded, however, and twenty-one replies came from such cities.

For the analysis here published of the observations of fifty mayors, The American City is indebted to Professor Herman Feldman, of Dartmouth College, a former member of the editorial staff of this magazine, who is now engaged in a comprehensive survey of the economic and industrial effects of Prohibition.

Substitutes for the Recreational Features of the Saloon

Men in active business and professional life are likely to be inveigled into joining so many clubs and organizations that it may appear strange to many that some people have had to resort to saloons for their recreational headquarters. Nevertheless, the fact that the saloons served the function of a "poor man's club" is well accepted, detrimental as the environment and the associations often were to the well-meaning workingmen who could not afford the temptations of its convivial atmosphere. What has taken its place? The questionnaire addressed to the mayors started, therefore, with the following inquiry:

1. *Has the abolition of the saloon increased the demand for adult recreation facilities in your city? What has the municipality done to meet this need?*

To this first question, thirty mayors replied "Yes" and seventeen "No." Of the thirty who expressed their belief that Prohibition had increased the demand for adult recreation facilities, eleven left the second part of the question blank or admitted that their cities had done nothing to meet the demand. The rest called attention to an encouraging number of new civic improvements of a recreational character designed to meet a growing public need. Chief of these was the extension of park and playground facilities, mentioned in the majority of replies, among which were listed several new ball parks and golf courses, baseball and football fields, tennis courts, skating-rinks and the like.

Mayor Francis M. Williams of Anderson, Ind., shows genuine pride in stating: "We have greatly increased our park acreage, and have one of the best golf courses and swimming pools in the Middle West"; and Mayor

*Forty-five of the answers are over the mayor's own name. In the other five cases the statement is signed by another official to whom the mayor had referred the inquiry.

Grant Holcomb of San Bernadino, Calif., reports: "Increased municipal parks and playgrounds; schools have increased the athletic fields used by the public; private athletic clubs have provided baseball, football, golf and tennis facilities: all since Prohibition." In other instances larger attendance at games and greater participation by adults in recreational activities were noted.

In a few cases, where the municipality had not provided directly for the increase in demand for recreation, the community had done so indirectly through the establishment of community houses and more frequent public entertainments by civic and semi-public agencies. Mayor Harry J. Scheifele, of Oneida, N. Y., reports: "The Knights of Columbus, Masons, Odd Fellows, Moose and Owls, have large, beautiful buildings all built or purchased within the last two years. Men turning to fraternal centers for recreation has made this possible." In another case, Prohibition is stated as having aided in the building of a Y. M. C. A. Increased attendance at the theaters was also observed, so that commercial recreation benefited.

A most encouraging tendency has been observed by Mayor Charles H. Bartlett of Evanston, Ill., who states: "There is an increase in *family* attendance at public entertainments."

Prohibition and Real Estate Values

Before the Eighteenth Amendment was ratified, it was prophesied that the abolition of the saloon would bring disaster to real estate values and that, because of the depression in assessed valuation, the burdens of municipal taxation would be excessive. To secure light on this question, the following was asked:

2. *Has the abolition of the saloon caused an increase or a decrease in real estate values on streets formerly having saloons?*

The pessimistic prophecies on this score seem to have been unjustified. Twenty-seven mayors replied that there was an increase in real estate values on such streets. Many answered the question rather emphatically, as shown by such statements as: "300 per cent increase"; "Quadrupled." Mayor Horace A. Sheldon of Port Jervis, N. Y., asserts that "the saloons were a detriment to nearby property. Their abolition has caused an increase in real estate on streets formerly having saloons," and Mayor John C. Tracy of Willimantic, Conn., writing in a similar vein, states: "The abolition of the saloon has had a decided effect on the increase in real estate values on streets formerly having saloons. These streets are now occupied by legitimate business, creating a much finer appearance to the street." On the other hand, twelve mayors did not observe any decided change one way or another, and six believed there was a decrease. Of the latter, those who explained their answer mentioned a surplus of business property.

The most interesting aspect of the replies to this question is the controversy raised by those who argue that real estate values have increased generally and that therefore the increase of values on streets formerly having saloons could not be attributed to Prohibition. Mayor M. R. Waters of Norwich, Conn., calls attention to the fact that "real estate values have increased on all business streets without regard to whether saloons were formerly there or not"; and Mayor Paul T. Klenk of Blue Island, Ill., is of the opinion that "while real estate values have increased enormously, the abolition of the saloon had no effect on such increases." Opposed to such views is the plausible explanation of Mayor Grant Holcomb of San Bernardino, Calif., that "real estate values have been directly increased by the abolition of the saloons, this having occurred not only on streets where saloons existed but also a marked increase in all real estate values. People now buy homes instead of living in rooming-houses. This is especially true of the poorer classes."

Automobile Accidents Caused by Intoxication

With the tremendous increase in the number of automobile owners in this country, the frequency of motor accidents has become a matter of grave national concern, more acute here than anywhere abroad. Traffic conditions in American municipalities demand, at the very least, the sobriety of the operator. Newspaper accounts of accidents would lead one to believe that intoxication of the driver is one of the outstanding causes. Whether the increase in such accidents lags behind the increase in the number of cars driven, or involves a larger proportion of those driving cars, is a crucial issue, showing the experience under Prohibition. The following two questions attempt to secure information on this point:

3. *Can you furnish any statistics which show whether, in proportion to the number of cars registered in your city, there has been an increase or a decrease in the number of automobile accidents caused by intoxication?*

4. *If there has been an increase in the number of automobile licenses revoked for intoxication, is that due to increased drunkenness, or to more severe laws, or to greater police efficiency?*

An examination of the replies indicates that the chief executives found this question difficult, since an accurate reply would have re-

quired examining statistics on the subject, which few municipalities have either kept or compiled. A third of the mayors did not reply to Question 3. The answers to Question 4 are rather difficult to summarize because a fourth of the mayors reported either that the procedure in case of driving while intoxicated was not to revoke licenses, or that few, or none, had been revoked on this ground, without explaining whether this meant that the situation had grown less serious or more so.

It is clear, however, that the replies as a whole show that the mayors do not find an increase in the number of intoxicated drivers reason for undue alarm, grave as they consider the general subject of automobile accidents to be. About two-thirds of those who replied stated either that there was a decrease in auto accidents due to intoxication or that, if the increase in the number of cars registered was taken into account, the situation had not been adversely affected.

Of the eight mayors who stated that there was an increase, only three made it entirely clear that they did take into account the proportional increase in cars. Typical of these is the statement of Mayor J. A. Bensen of St. Cloud, Minn., that "considering the increase in motor vehicles and population, accidents from intoxication are greater in proportion now than before." Mayor Charles F. Straube of Ambridge, Pa., serving his third four-year term, calls attention to the fact that "automobile accidents have menacingly increased since Prohibition went into effect," and, while disclaiming having any statistics on the revocation of auto licenses, states that "drunkenness has increased, by the number of cases shown on my docket."

In response to the question as to whether increases in the number of auto licenses revoked for intoxication were due to increased drunkenness or rather to more severe laws and greater police efficiency, the last-named was given as the chief cause, more severe laws voted second, and drunkenness placed third. Among the clearest of explanations was that of Mayor P. T. Klenk, of Blue Island, Ill.:

"3. Off-hand, and without furnishing any statistics, I believe that the proportion of automobile accidents caused by intoxication has been slightly increased. Being a suburban community, we find that many residents of other cities leave their cities and go to other communities for liquor, and in passing through Blue Island have an accident now and then. I have had an order in effect for several years that in every accident case whenever the police believe that the driver or occupants of either car have been drinking, the city physician be called forthwith to examine such persons. Thus we have a fairly definite idea as to the number of persons driving cars while intoxicated, and having accidents. Prior to Prohibition, however, no such records were kept.

"4. It is seldom that a local resident is arrested for driving an automobile while intoxicated, and we have found it very unsatisfactory to attempt to revoke the license of the non-resident driver. We find that a severe fine or jail sentence accomplishes a greater good."

Intemperance as a Factor in Poor Relief

In almost every study of poverty and dependency, intemperance has stood out as a factor in bringing the dependents of the inebriate, and often the inebriate himself, to public and private charities. With the Eighteenth Amendment now a fact, it is a matter of considerable interest to determine whether or not the situation in this respect has been improved. The next question reads:

5. *Has intemperance become proportionately a more or less common factor as a cause of dependency, public aid, poor relief, etc.? (Please furnish definite statistics, if available.)*

That intemperance has become a less common factor in dependency seems to be the opinion of a good majority of mayors replying, only six mayors noting no change and four claiming that conditions had grown worse. Among the most enthusiastic of the replies are the following:

Mayor Harry J. Scheifele, Oneida, N. Y.: "Less common. Heretofore if a man was seen intoxicated nothing was thought of it, but today it is a rare sight and people discuss it. City is growing, but today we are spending only $2,000 a year on poor relief, and it cost that much ten years ago."

Mayor L. J. Yager, Waukegan, Ill.: "We are spending less and less for relief. This year saving $20,000 in township over any previous year."

Mayor Francis M. Williams, Anderson, Ind.: "Dependency from intoxicants in our city is practically at the vanishing point."

Mayor Charles H. Demarest of Bloomfield, N. J., reports, "Great decrease of intemperance in our city. No increases in relief"; and Mayor Charles H. Bartlett of Evanston, Ill., "Our associated charities find less dependency due to drinking, since it is harder to obtain liquor." Mayor Warman of Uniontown, Pa., is able to state: "There is very little want in this city and none caused by drunkenness"; and Mayor Charles F. Straube of Ambridge, Pa., explains it by stating: "Have few cases of this kind, attributable perhaps to the activity and prosperity of factory and shop." A different type of explanation is given by Mayor C. W. Sandstrom of Moline, Ill.: "Would consider intoxication a less common factor among the dependents because the price for intoxicants is prohibitive to the poor."

On the other hand, Mayor W. Wiesner of

Green Bay, Wis., states: "Cost city $11,100 more in 1925 as compared to 1918. This increase is not entirely due to intemperance, but larger proportion is"; and Mayor George F. Sehring of Joliet, Ill., explains: "The price paid for the inferior product, and the results naturally are worse than conditions during regulated and legitimate days." The Mayor of a small town, who did not wish to be quoted by name, goes so far as to say: "Our town is worse than ever before; 75 per cent of our population makes all kinds of wine and liquor."

Nevertheless, a definite improvement seems to be the keynote of the replies. Mayor S. H. Park of Pomona, Calif., offers his testimony that "we have been 'dry' too long to dig up statistics, but our experiences for twenty-five years suffices for us to desire to leave it as it is"; and Alfred F. Bailot, Chairman of the Board of Selectmen, Adams, Mass., states that while the application for public aid has increased, this is not due to intemperance. Mayor Paul T. Klenk of Blue Island, Ill., in a thoughtful opinion, says: "For a number of years financial conditions have been very good in and about Blue Island, and there are fewer cases of dependency. It is my honest belief, however, that while Prohibition has not been the main factor, in a few cases it has lessened public dependency"; while Mayor C. H. Deninger of Bradford, Pa., hesitatingly replies: "Intemperance has become less each year and dependency on poor relief, I believe, has somewhat decreased."

Prohibition and General Economic Welfare

Th widest interest secured by any of the questions was the next, which reads as follows:

6. *Do you believe that the prosperity and welfare of the average workingman's family have been promoted by the abolition of the open saloon? If so, has this shown itself in increased home ownership by working people? In what other ways has this shown itself?*

Every one of the mayors replied. In view of the fact that forty-one of the mayors answered "Yes" to the first part of the question, much as they seemed to differ on other aspects of the problem, and about thirty-five answered "Yes" to the second, the observations constitute testimony of an overwhelmingly favorable character concerning the economic effects of Prohibition on the wage-earner.

Attention was called to a great variety of economic benefits accruing to the workingmen, as will be seen in the following excerpts. Home ownership was mentioned most frequently. On this point, Mayor L. J. Yager of Waukegan, Ill., goes so far as to say that "home purchases are more common than rentals now. There is a mania for purchasing homes." Mayor Charles F. Straube of Ambridge, Pa., however, explains the increase in home ownership as "resulting from high wages during and after the world war in no wise attributable to Prohibition." Mayor Jerry M. Jeffries of Moberly, Mo., believes that the prosperity and welfare of the workingman's family have been promoted by the abolition of the open saloon, but is of the opinion that there has hardly been time for this to show itself in home ownership. Instead, in his community, the effects have been seen in the better condition of the existing homes.

Increased savings bank deposits by working people, as well as more depositors, was second in the benefits mentioned, followed closely by such factors as the purchase of automobiles, better food and clothing for the family, increased comforts and luxuries for the home, better education for workingmen's children, greater interest in recreation and amusement, coupled with attendance by the family rather than by individuals, and many other desirable changes, as the following comments of the officials indicate:

John J. Lynch, City Clerk, San Jose, Calif: "Increased volume of purchasing by working people. Now owners of homes, automobiles, radio, property for investment or speculation."

Mayor Robert D. Warman, Uniontown, Pa.: "While our nine saloons ran and liquor was sold, only the rich and the saloon people had cars, say two hundred. Now the number is more than five thousand cars in the city. Workingmen have them to go to work. Many hundreds of men with families, who were down and out almost when whiskey was lawfully sold, have since the passage of the Eighteenth Amendment built fine homes and paid for them. Their wives and children are well care for—as well as the rich used to be cared for."

Mayor John L. Hetherington of Bloomington, Ind., sums up: "Contented people—less suffering — happier children — better homes—better town and better America." Mayor Charles H. Demarest of Bloomfield, N. J., suggests a result which it is hoped is general, in calling attention to "men taking more interest in civic organizations"; and Mayor Newton A. Greene of New Albany, Ind., believes that the result of Prohibition has been increased church attendance. Mayor L. H. Handley of Richmond, Ind., is one of several executives who point to a better payment of bills to merchants.

That Prohibition has worked exceedingly well in some communities would be the conclusion from the report of Mayor C. H. Pensinger of Chambersburg, Pa., who makes the encouraging statement that "an intoxicated person, staggering, is almost unknown, and occurs

only among the very lowest element." Alfred F. Bailot, Chairman of the Board of Selectmen, Adams, Mass., is much impressed by "the number of workingmen's children who are going through High School."

On the other hand, Mayor Thomas A. Fyffe of Rahway, N. J., has his doubts as to whether the improvements are to be attributed to prohibition. He writes: "More working people than ever before own homes and are better off in many ways than before Prohibition, but that is not necessarily because of Prohibition. It may be in spite of it, due to our great prosperity since the war, shorter working hours, greatly increased wages and changed economic conditions, having but little if any relation to the Prohibition question."

Only one example of adverse criticism can be quoted, because it was the only comment of its kind. That is by Mayor J. A. Bensen of St. Cloud, Minn., who states emphatically that: "The average workingman, in our opinion, drinks just as much, but poorer stuff, than he ever did. He is not contented with Prohibition. The abolition of the open saloon is a good thing, but the working class should have the opportunity to purchase good beer."

Testimony of Employers as to the Industrial Effects of Prohibition

Supplementing the information based on their own observation, an attempt was made to get the consensus of opinion expressed to the mayors by representative employers concerning the effects of the Eighteenth Amendment on industry. With this in mind, it was asked:

7. *What is the testimony of employers in your city with regard to the effects of Prohibition on such matters as the number of persons discharged for drunkenness, the individual productivity of the worker, industrial accidents, absences after pay day, etc.?*

About ten of the mayors did not feel sufficiently well posted on this subject to reply. Of the rest, the answers of twenty-seven may be regarded as reporting industrial effects of a distinctly favorable nature, and about five otherwise. Mayor L. J. Yager of Waukegan, Ill., feels no hesitancy in claiming that "not a factory head wants the open saloon"; and Mayor S. H. Park of Pomona, Calif., which has had Prohibition under local option, asserts that "every employer of labor, and with very few exceptions, every city official, for twenty-five years has been favorable toward Prohibition." Mayor W. E. Freeman of Springfield, Mo., believes: "There is no comparison now and before Prohibition. Where there used to be much drunkenness, now you seldom ever see a drunk, and when you do he is somewhat of a curiosity."

The comments of two of the mayors go more specifically into the conditions which have been improved. It is hoped that Mayor Charles H. Demarest of Bloomfield, N. J., does not overstate the situation in his comment: "We have fifty-five factories. Some weeks there is not a single accident of any kind among thousands of workers. Some large factories report greater efficiency." Mayor John C. Tracy of Willimantic, Conn., informs us that: "Employers report a decided falling off in absence from work and industrial accidents, while at the same time there is a general improvement in the quality and amount of production."

On the other hand, Mayor Clarment Knapp of Saratoga Springs, N. Y., doubts the one-sidedness of this problem by commenting: "The testimony of prohibitionists is generally exaggerated; non-prohibitionists aren't interested enough to testify." Mayor H. F. Kitz of Oshkosh, Wis., evidently does not favor the present system, since he says: "People used to work and take three or four glasses of beer which cost them fifteen or twenty cents. In taking this privilege from them, they drink Moon at fifty cents a drink." The answer of Mayor J. A. Bensen of St. Cloud, Minn., reads: "No better than before Prohibition. If anything, worse." The Mayor of a mining town, who does not wish to be quoted, reports: "The employer claims that drunkenness is on the increase, as you can find home brew in the majority of homes."

Comparison of Conditions in Cities Formerly Dry Under Local Option

Finally, THE AMERICAN CITY undertook to get the opinion of the mayors whose municipalities had been dry under local option, in order to determine whether the situation has been improved as a result of Federal action. The question designed to solicit information on this score, asked:

8. *Has your city ever been "dry" under local option, prior to nation-wide Prohibition? If so, when? Are present conditions better or worse than under local option?*

Only about half of the cities replied. Of these, nineteen reported that conditions were better, two stated that conditions were partly better and partly worse, while five took the view that things had changed for the worse.

On the part of those who replied that conditions had improved, considerable enthusiasm was expressed:

Mayor Francis M. Williams, Anderson, Ind.: "Far better under the Volstead Act. There is

really no comparison."

Mayor John C. Tracey, Willimantic, Conn.: "Many years ago this city occasionally went 'dry' under local option, but for many years the question had not been voted on and the city was considered 'wet.' The conditions at present are vastly improved over local option."

Mayor Grant Holcomb of San Bernardino, Calif., explains why things are better: "Enforcement of the city ordinance has been made much easier because of the aid of the Federal Government and also because the Volstead Act is easier to enforce than the City and County Act." The explanation of Mayor Charles H. Bartlett of Evanston, Ill., is: "We are not bothered by the drunks returning from the saloon territory outside our city." Mayor Harry J. Scheifele of Oneida, N. Y., explaining that formerly local option existed to the extent of restricting the number of saloons in the city, adds that now "conditions are much better but are far from ideal. If city authorities were permitted more power with state help we could meet this situation much better."

Two of those who report that conditions are better suggest nevertheless that some changes in the Volstead Act might be desirable. Mayor Samuel A. Carlson of Jamestown, N. Y., expresses his opinion as follows:

"It is possible, however, that if the Government undertook the manufacture of pure beer and sold same in limited quantities directly to consumers, the two elements, viz., profit and poison, might be eliminated from the traffic, which would reduce drunkenness to a negligible degree. Under Government operation there would be no profit in the bootlegging or saloon business and, if the Government made absolutely pure beer, there would be practically no intoxication. If the Government can be trusted to go into the business of war, why not in the business of supplying pure beer?"

Among those who felt that Prohibition has had a bad effect, Mayor John R. Paine of Clinton, Ind., states that "conditions are morally and financially worse"; and Mayor George J. Brinton of West Chester, Pa., that: "Conditions are worse than before the Volstead Law was passed. Our county jail has never been so overcrowded." The only approach to a reason for worse conditions is given in the reply of Mayor George Sehring of Joliet, Ill., who points out that "local option restricts in districts where wanted, not the whole nation."

A Comparison of Conditions in One Community

An exceedingly interesting comparison of conditions before and since the Eighteenth Amendment is given in a letter of Mayor Robert D. Warman of Uniontown, Pa., who served as mayor from 1906 to 1910, from 1914 to 1916, and since 1923 has been in his third term. The following excerpts state the principal contentions of Mayor Warman:

"About ten years ago we had the 'Brooks High License Law.' In our city there were 9 license hotels, with barrooms 100 to 120 feet long and 30 feet wide, where from 50 to 64 bartenders served the public with liquors from 5 A.M. to 9:30 P.M. This city is the center of the Connellsville coke region. A street-car line and two railroads furnished transportation from all the little towns for twelve miles around this city. The saloons were full of people all day long.

"We had a police officer in each barroom to keep the peace and to see that the saloon was run according to the Brooks Law, which forbade the selling of liquors to any one visibily affected or of known intemperate habits, the penalty being loss of license. We loaded every drunk on to the street car or train to get him home, if he could get home. Yet the lock-up was full every night, and every morning there were from forty to one hundred people given hearing for drunkenness.

"The sober man was an exception. Property was cheap. Men were unreliable for work or to pay any bill. Store people who trusted failed in business. Strikes were frequent. Poverty was great. The hotel people and the rich had autos and homes. The work people had nothing and when work was slack there was poverty at once.

"Now the people are sober. You can ride a street car or train all day and see no sign of liquor or any one under the influence or even smell it on their person. They are saving their wages. Storekeepers do not have to trust. None fail. Property is high, for any one can buy; so many have the money that there are more buyers now. Folks that were down and out because of drink now have homes and autos.

"All our hotels used to be on Main Street, as well as the larger store and business places, yet the price of land was about $1,000 per front foot and very little of it could be sold for that much. Since the Eighteenth Amendment the price has gone up to $5,000 a front foot and is hard to buy even at that price. The old barrooms and basement of the Exchange Hotel were rented by John Reagan, the owner, to the Kresge Company, for $1,500 per month for 40 years, or $720,000."

Conclusion

The observations of the officials of fifty of the smaller-sized towns add some interesting, and perhaps significant, information to our knowledge of Prohibition. We are able to see with their eyes certain of the aspects of Prohibition which the sensationalism of the metropolitan press throws into the darker background.

Most of the replies were distinctly favorable to Prohibition. We learn that the abolition of the saloon as a recreational institution has given some impetus for communities and groups, through official and non-official channels, to meet their recreational needs in other and probably more wholesome ways. With regard to saloon property values, it seems that Prohibition laws came at a time when the ill effect was not general and only temporary, at most, for the replies indicate that in the great majority of communities the value either went

up or remained the same. Auto accidents caused by intoxication are regarded with concern, but this is seen rather as an incidence of wider ownership and greater traffic than of a relative increase in intoxication. Intemperance is regarded as becoming decidedly less important as a factor in poor relief. Most encouraging testimony is advanced as to the beneficial effect of the abolition of saloons upon the welfare and standard of living of the average workingman's family. The impression the mayors have received from employers as to the industrial effects of Prohibition seem to indicate that important advantages have accrued to industry in productivity, safety, and morale.

On the matter of comparing present conditions with former ones, there is little echo of the condemnation often met with in the cities, but rather a wish for more efficient administration and control. While the questionnaire attempted to cover only a limited range of inquiry, enough appears in the replies to bring out, at the very least, that with the evils of Prohibition there has been mixed a great deal of good. Both in their actual answers and in the spirit in which they are written, the mayors in the smaller towns seem to want more Prohibition, not less.

Cities Represented in the Foregoing Survey

The officials whose answers to THE AMERICAN CITY's questionnaire on Prohibition have made possible the foregoing article are given below. The fact that all of the opinions expressed are not listed by name under each subdivision of the survey is due in part to the space limits of the article and in part to the request of some of the mayors that they be not quoted by name as to their attitude and observations on the subjects under discussion. All opinions expressed in the fifty replies have, of course, been considered in the compilation of the article:

City and State	Name of Official Replying (Mayor unless otherwise indicated)
Adams, Mass.	Alfred F. Bailot, Chairman, Board of Selectmen
Ambridge, Pa.	Charles F. Straube
Anderson, Ind.	Francis M. Williams
Arlington, Mass.	John A. Easton, Clerk
Beverly, Mass.	Willard O. Wylie, Rep. in Legislature
Bloomfield, N. J.	Charles H. Demarest
Bloomington, Ind.	John L. Hetherington
Blue Island, Ill.	Paul T. Klenk
Bradford, Pa.	C. H. Deninger
Butler, Pa.	S. R. Twyford, City Clerk
Chambersburg, Pa.	C. H. Pensinger
Clinton, Ind.	John R. Paine
Elgin, Ill.	Earle R. Kelley
Evanston, Ill.	Charles H. Bartlett
Green Bay, Wis.	W. Wiesner
Hornell, N. Y.	Stephen Holland
Huntington, Ind.	C. W. Snider
Jamestown, N. Y.	Samuel A. Carlson
Jeffersonville, Ind.	Harry C. Poindexter
Joliet, Ill.	George F. Sehring
Lincoln, Ill.	Howard Engle
Lockport, N. Y.	F. J. Moyer
Logansport, Ind.	Warren J. Butler, Superintendent of Police
Moberly, Mo.	Jerry M. Jeffries
Moline, Ill.	C. W. Sandstrom
New Albany, Ind.	Newton A. Greene
Newburyport, Mass.	Oscar H. Nelson
Norwich, Conn.	M. R. Waters
Old Forge, Pa.	Frank Berger
Oneida, N. Y.	Harry J. Scheifele
Oneonta, N. Y.	B. C. Lauren
Oshkosh, Wis.	H. F. Kitz
Peru, Ind.	T. O. Keller
Phillipsburg, N. J.	William R. Potts
Pomona, Calif.	S. H. Park
Port Jervis, N. Y.	Horace A. Sheldon
Rahway, N. J.	Thomas A. Fyffe
Richmond, Ind.	L. H. Handley
St. Cloud, Minn.	J. Arthur Bensen
San Bernardino, Calif.	Grant Holcomb
San Jose, Calif.	John J. Lynch, City Clerk
Santa Barbara, Calif.	H. A. Adrian
Saratoga Springs, N. Y.	Clarment Knapp
Springfield, Mo.	W. E. Freeman
Uniontown, Pa.	Robert D. Warman
Virginia, Minn.	J. G. Brandt
Waukegan, Ill.	L. J. Yager
Wausau, Wis.	Otto Muenchow
West Chester, Pa.	George J. Brinton
Willimantic, Conn.	John C. Tracy

Why Partisan Appointments Cannot Result in the Best Municipal Service

(Fourteen Points from a Recent Bulletin of the Kansas City Public Service Institute)

1. Because appointments are a reward for political service and not because of the possession of qualifications for the work to be done—the plan used in successful private business.

2. Because employes selected chiefly on the basis of political qualifications do not do as good work as employes with ability qualifications.

3. Because fewer employes are necessary when ability is the test for appointment.

4. Because unnecessary employes are often hired to pay political obligations.

5. Because political employes place loyalty to party above loyalty to city and owe their jobs to others than the administrative officials under whom they serve.

6. Because, for this reason, they are less subject to discipline and control.

7. Because "turnover" is large with each change of party in power.

8. Because the cost of turnover is heavy, due to constant training of new employes. Private business spends large sums to reduce turnover. Public business deliberately increases it.

9. Because morale in a semi-temporary force of employes is always low.

10. Because, with low morale and weak discipline, it is impossible to build up a hard-working, interested, satisfied, and efficient administrative organization.

11. Because the employe who gets his job through political influence expects to keep it the same way.

12. Because political appointees devote much of the city's time to the promotion of the fortunes of the party to which they belong.

13. Because, for these reasons, it costs more to run the governments.

14. Because on the qualifications of individual employes and the standard of the personnel as a whole depend to a large degree the progress of the city industrially, commercially, and as a desirable place in which to live.

Pitometer Surveys in Improving and Maintaining Distribution Systems

By Meyer Serkes
Assistant Engineer, Water Division, St. Louis, Mo.

IN 1912, the Water Division of the city of St. Louis adopted the pitometer as a means of detecting, measuring, and curtailing its waste of water. At that time the Pitometer Company contracted to make several leak surveys in districts covering a greater part of the downtown section of St. Louis.

Method of Making Survey

The distribution system is divided into districts of suitable size, depending upon the available feed mains, the class of consumers, the location of valves, and the fire hazard to be created. One main is selected to supply the district under investigation, and all other feeds into this section are closed. The pitometer is placed upon this main to record the amount of water entering this district per 24 hours. From this record the minimum night rate between the hours of 12:00 midnight and 3:00 a.m. are compared with the total 24 hours' consumption. In districts where the minimum night rate obtained is 40 per cent or less, such would be considered as good, tight sections; but if it were to run 50 per cent and over, such a district would be further subdivided and the excessive night rate of flow accounted for. The larger commercial meters would be read during the night period and accounted for in the study of the night flow.

In this further subdivision, sections are readily detected which are free from leakage; sections which show small flows during the period of minimum night flow indicate fixture leakage and would require a house-to-house inspection; sections where large flows are recorded would indicate large water-main leaks, service-pipe leaks, or a larger number of fixture leaks.

All these conditions are thoroughly investigated by the pitometer engineer until all leaks have been located and repaired, after which the district is again measured to note the improvement made.

During the progress of such a leak survey much valuable information as to the condition and location of valves, hydrants, meters, and other appurtenances of a system is collected, and the errors readily detected and corrected.

The results of such a survey in St. Louis in 1912 showed conclusively the advisability of continuing such work, and the Department purchased several pitometers and has since maintained its own Pitometer Department, which has been carrying on this routine leak-detection work on a small scale to very good advantage.

Result of Recent Survey

During the past year a second-class residential section was surveyed, in which the following leaks were detected in the following places: 371 faucets and toilets, 3 service pipes, 3 fire-hydrants, and 10 street valves. These leaks constituted a wastage of 327,000 gallons per day, or 119.6 million gallons per year. During the house-to-house inspections in this district, additional revenue was secured, in that 381 automobiles and 161 washing machines, which are taxed on a flat-rate basis, were placed upon the books.

The section investigated, comprising a population of 20,000, showed a consumption of 96 gallons per capita before, and 88 gallons after, the leaks were taken up. These figures, which are far below the general average consumption of 145 gallons per day for the entire city, prove the section to be a good one and seem to indicate that the consumption in the industrial districts must be responsible for the increased per capita consumption.

Extension of Work

In the early routine pitometer leak work it soon became apparent to us that a broader and more comprehensive use of the pitometer could be made in a study of the exact flow conditions existing during maximum and minimum periods of the day in all the main feeders of the distribution system. Since this time the Department has continued using the pitometer in making distribution feeder surveys yearly, whereby some mains were found to be doing no work whatever, and others doing more than their share with velocities higher than desirable, causing excessive friction losses in the line.

The data obtained yearly are used to very good advantage in new distribution design, and in the modification of the existing system so as to equalize the work by the various overtaxed feeders, thereby enabling better pressures to be maintained at critical points in the system.

Revision in Distribution System

In one instance, a few years ago, it was observed from pitometer flow readings that none of the low-pressure main feeders on and east of Grand Avenue, which supply the Compton Hill reservoir, were taxed to capacity; that about 50 per cent of their total flow was supplied directly to the reservoir during the night period, between 6:00 p.m. and 6:00 a.m. The central feeder in this district, a 36-inch main on 20th Street, was observed to deliver practically no water from Chouteau Avenue southward, day or night.

When the problem of providing a new outlet for a high-pressure pump from Bissell's Point to a section in South St. Louis, which was giving us trouble during periods of high consumption, came up for consideration, it was decided to take advantage of the condition found to exist in this 20th Street 36-inch main and turn it into a high-pressure feeder.

By some minor changes and disconnections from this 20th Street main, it was directly connected to the high-pressure pump and made to carry water at the rate of 15 million gallons per 24 hours, into this critical section of South St. Louis, thereby avoiding the laying of a new 36-inch main, as was proposed previously, at a saving of $140,000, and increasing pressures about 14 pounds at this critical point.

The St. Louis distribution system consists of two pressure systems, a high and a low, these being separated in the system merely by the closing of certain valves. The high-pressure system renders service to the higher elevations in the west and southern parts of town, while the low-pressure system takes care of the lower elevations in the east or downtown sections and the extreme south. The high pressure starts with 120 pounds at Baden Station and the low pressure with 80 pounds at Bissell's Point.

Other Examples of Savings

In another case it was observed that a 30-inch low-pressure feeder in Forest Park Boulevard from Grand Avenue to Sarah Street was carrying an almost insignificant amount of water. By a few additions and cross-connections to this main it was taken out of low service and turned into a high-pressure feeder so as to augment a 36-inch high-pressure feeder across Grand Avenue which was congested during periods of large consumption between Bissell's Point Station and a point south of Olive Street.

During the past spring when an important 36-inch crosstown feeder had to be shut down in a certain section to make repairs, it was thought that an existing cross-connection to this feeder, just north of the point where the repairs were to be made, would divert most of the water eastward and into another crosstown feeder which was not taxed to capacity.

Upon checking up with the pitometer the estimated flow that this cross-connection was to carry, it was discovered that the main carried no water whatever, and immediately upon checking the valves on this line we found a valve closed which was supposed to be open.

Last year a pitometer flow survey was made upon all the high-pressure feeders of 20-inch and over, in which valuable data were obtained, whereby recommendations were made for changes now in progress to the present system.

Water-Meters

There are many good reasons for the use of water-meters. One of the most important is that selling water by measurement is the only logical and business-like way. This method is now used by all private utility corporations and should be likewise used by all municipal utility departments. It is the only method that does not result in gross inequalities and discriminations against some of the consumers in favor of others. Another reason is that the installation of water-meters is the only practical method yet devised for restricting excessive waste.

The use of meters is now becoming much more general, and in most cities today the large consumers, at least, are now metered. In St. Louis, any connection other than one ¾-inch tap requires a meter. The present consumption per capita is 145 gallons. Under a totally metered system it would probably be 100 gallons per capita.

I would not hesitate to estimate that the loss or waste of water due to small unmetered consumers averages 50 to 60 per cent of the total amount of leakage. The general use of meters should be the watchword of the day in a modern water-works system.

Usually there is a great deal of opposition raised to the introduction of meters, but in most cases it has been found that after they have been installed the good results which are immediately obtained cause them to be greatly favored by a community.

The general installation of meters in Detroit, Milwaukee, Cleveland, Rochester, Baltimore, Los Angeles, and Atlanta has in recent years greatly reduced the per capita consumption in these cities, thereby enabling a tremendous saving to be made in the cost of pumping, extension to the distribution system, and chemical treatment of the water.

which, when completed and interconnected with the new Missouri River source, will give a direct supply to those sections in South and West St. Louis which are urgently in need of relief.

The use of the pitometer, therefore, is an important factor in the study of the correct functioning of a distribution system.

Water-Main Cleaning

A number of years ago an extensive pipe-cleaning program was undertaken to reduce the friction losses and to restore the carrying capacities of some of our oldest mains, which were in service previous to the installation of our rapid sand filtration process. In this work the pitometer was used extensively in determining the pipe coefficients, friction losses, and carrying capacities of the various mains before and after cleaning.

The contractor guaranteed to restore the carrying capacities of main cleaned to within 5 per cent of that of new pipe, using Weston's table of flows as a basis. Tests made upon some of the mains, before cleaning was started showed carrying capacities of 40 to 60 per cent of new pipe, and tests run immediately after the cleaning showed gratifying results of 95 per cent of new pipe.

These same mains have been re-tested year after year, until today a few of them have dropped as low as 70 per cent, although most of the larger mains have held up to a much higher percentage.

The intention of the Cleaning Company at that time was to restore the pipe to its original diameter by getting out all the hard lime incrustation and mud. Because most of this lime scale was hard and adhered to the pipe very tightly, the contractor constructed what were called "saw-tooth blades," which were very sharp and stiff, so as to make sure that they would remove everything. In removing the lime incrustation most of the tar coating which adhered to the bottom of the lime scale came out too. Thus the bare metal was exposed to the water, and an iron incrustation immediately formed, causing very rapid depreciation.

Testing Meters in Place

In many cases where it is expensive and impossible to take a large meter out of service for testing in the shop, the pitometer is resorted to in making a test in place with extreme accuracy.

A few years ago, in making such a test, a 6-inch meter was found to under-register about 15 per cent. This error was caused by an inexperienced meter man who made a change in dial gears in the field after making a small flow test. Since this meter supplied a very large consumer of water, the amount of unregistered water was estimated and a bill for several thousand dollars was presented and collected without much difficulty when the details of the incident were explained.

Again, during the war period, the Government, which purchased water for its reservation through two 6-inch meters in parallel, disputed the correct registration of these meters by a check at its venturi meter in its pumpstation. A test with the aid of the pitometer proved that our meters were within the limits of accuracy required and that the error was in the indicating device of the venturi meter.

Where disputes occur, such tests as these, which are made in direct observation of a consumer, leave no doubt in his mind as to the merits of the case.

Water Waste

The problem of curtailing the waste of water, which invariably occurs in all unmetered cities and towns, is receiving more attention from engineers and water-works officials today than ever before, owing to the fact that additional plant equipment and the finding of new sources of supply are becoming very costly.

The records of consumption in many cities very clearly indicate that the amount of water wasted daily often far exceeds the quantity really necessary to meet the ordinary demands. This waste results largely from the fact that most consumers fail to appreciate the value of an unchecked, abundant, pure water-supply.

This excessive use of water not only reduces the pressure, which is felt immediately at the critical points of a system, but also increases the cost of pumping, and taxes a plant to its utmost capacity. A breakdown at such a period would create a hazard.

During the past dry summer, when sprinkling was the general order of the day, our plant was taxed to its capacity of 160 million gallons daily and it became almost impossible to maintain pressures at some of the critical high points. However, just as soon as the excessive sprinkling was discontinued, the plant output dropped back to its normal capacity of 130 million gallons daily and average pressure increased from 5 pounds to 15 pounds at critical points.

A legitimate use of the garden hose would not cause such an excessive waste. It is just the unmetered or flat-rate consumer that allows his hose to run continuously all day long and has no consideration of the real value of a good water-supply, who is one of the prime factors in excessive waste. This same condition exists during the near-zero weather in winter when

faucets are allowed to run during the night to prevent freezing of service pipes. Since St. Louis is only 7.6 per cent metered, it can be easily understood why our plant is called upon at various times of the year to deliver its rated capacity.

The problem of waste reduction is one of great economic importance and should warrant the attention of all water-works engineers. The excessive waste in St. Louis can be attributed to the following causes:

1. Leakage from defective plumbing and fixtures
2. Excessive sprinkling and promiscuous opening of taps
3. Extensive use of free water in city institutions and parks and needless industrial waste
4. Leakage from the underground system of pipes

Leakage from defective plumbing and fixtures can best be controlled by systematic house-to-house inspections, regularly maintained by a permanent staff of intelligent inspectors, with the aid of the aquaphone, by good plumbing ordinances, or by the universal installation of meters.

Excessive sprinkling can best be curtailed by the enactment of laws restricting the use of the hose to certain periods of the day.

Extensive use in city institutions and parks can best be restrained by a closer cooperation between department heads and the Water Division. In one city institution alone a million gallons per day is used, of which 30 to 40 per cent is purely waste.

At one fountain in a certain park, 500,000 gallons is wasted daily. Such waste as this in parks and industrial plants could readily be conserved by the installation of a recirculating pumping system at a small initial cost.

The detection of leakage in the underground system and the conservation of the water require the services of experts trained in this line who can make an extensive pitometer survey, as I have briefly outlined.

The four means for reduction of excessive waste which I have mentioned have their particular merits. All remedies except the installation of meters are of a temporary value only and must be constantly repeated, and, above all, must be supported by strong laws and good plumbing ordinances to be effective.

ACKNOWLEDGMENT.—From a paper read before the Iowa Section, American Water Works Association, at St. Louis, Mo.

A Practical Snow-Removal Demonstration at the Purdue University Road School

GALION-INTERNATIONAL MOTOR GRADER AT WORK ON THE CAMPUS OF PURDUE UNIVERSITY, LA FAYETTE, IND., MOVING SNOW DURING THE SESSION OF THE ANNUAL ROAD BUILDERS SCHOOL HELD AT THE UNIVERSITY

Street Lighting by Oil Engine Power in Perth Amboy, N. J.

By J. B. Franke

City Electrician, Perth Amboy, N. J.

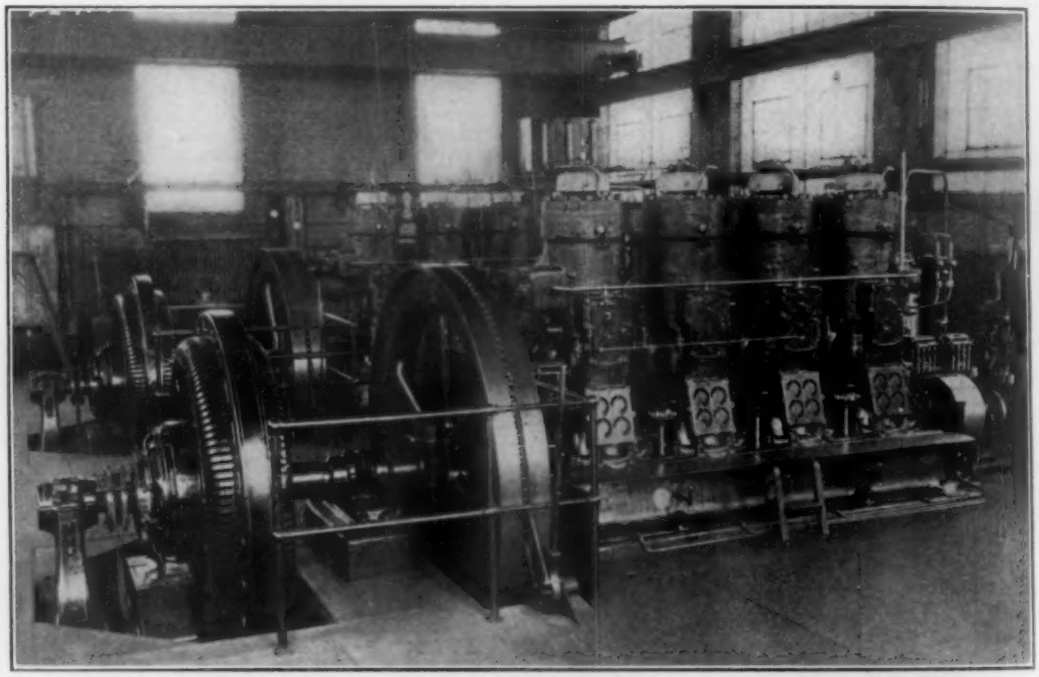
IN 1916 two 4-cylinder, 2-cycle Bolinders surface ignition heavy oil engines were installed in the municipal electric light plant at Perth Amboy, N. J., for handling the street-lighting load. These engines deliver 360 b. h. p. each at 225 r. p. m. and are direct-connected to 200-kw., 2-phase, 60-cycle General Electric alternators and exciters. The street-lighting load is a continuous one, barring occasional burned-out circuits, of 185 kilowatts or about 85 per cent, which is carried by the engines alternately. The load consists of over 700 series street lamps in sizes from 100 to 600 candlepower.

Oil for the plant flows by gravity from a siding through a 3,500-foot pipe to the storage tank of 40,000 gallons capacity, which does away with any extra expense for the handling of the fuel.

Unusually few repairs have been necessary in the ten years these engines have been in service. The only major spare part which has been purchased is one cylinder, while a spare wristpin and a set of wristpin and crankpin brasses which were bought some time ago and which have been charged against the engine, have not been used as yet.

The engines were changed to solid injection type, one of the units being rebored and converted in 1924 and the other in 1925. Instead of direct-pumping the cooling water from the city mains to the cylinder jackets, a hot well has been installed, together with a centrifugal pump, so that now only enough city water is being added to keep the temperature at about 85 degrees Fahrenheit. This produces fewer extremes of hot and cold in the cylinder walls.

A De La Vergne oil reclaimer is used and effects a recovery of about 48 per cent of the lubricating oil.



DIESEL ENGINES IN THE MUNICIPAL LIGHT AND POWER PLANT, PERTH AMBOY, N. J.

The operating schedule for December, 1926, shows that the plant operated 432 hours and 14 minutes, generating 84,180 kilowatts for $703.41, not counting labor, making the cost less than one cent per kilowatt.

Fuel oil	10,022 gallons	@	5.43c	$544.19
Gulf engine oil	143 gallons	@	49c	70.07
Ideal engine oil	205 gallons	@	36c	73.80
Reclaimed oil	207 gallons	@	3c	6.21
Kerosene	31 gallons	@	14c	4.34
Gasoline	32 gallons	@	15c	4.80
				$703.41
Labor six men				984.42
				$1,687.83

The Modern Filtration Plant at Goldsboro, N. C.

By W. C. Toler

Superintendent of Water-Works, Goldsboro, N. C.

ABOUT two years ago Goldsboro, N. C., enlarged its water plant from 1,500,000 to 2,500,000 gallons daily, at a cost of about $70,000, so that today we have one of the best small modern water purification plants in the state.

The water-supply for Goldsboro comes from Little River, which belies its name at times. It never gets so small that there is not an ample supply. Water is pumped from the river to the filter plant by both electric and steam pumps through a 12-inch pipe about 400 feet long. The steam pumps are used only when electric current is not available. Just before water enters the mixing chamber lime is applied, immediately followed by alum. Both chemicals are applied automatically by three dry feed machines, two Roberts machines and one Savage machine, which is used for secondary service. At different times of the year the water gets into such a bad shape that it is impossible to put enough lime into the water in the mixing chamber to satisfactorily build up the alkalinity, so that is taken care of by the secondary machines, which feed lime into the water just as it comes from the filter. Lime is used in the water only when the water is low in alkalinity, but alum is always used.

THE GOLDSBORO, N. C., FILTRATION PLANT AND PUMPING-STATION

At left, back of plant, showing mixing chamber and coagulating basin. Center, pump-house on river-bank. Right, front of the plant, showing the clear-water well with wash-water tank in background

Mixing Chamber

At the head of the mixing chamber is a balancing chamber in which is set a float controlling a 12-inch hydraulic valve which automatically admits water to the mixing chamber as needed and prevents overflow in any part of the plant.

The mixing chamber is of concrete and is about 30 inches wide, 18 feet deep, and 85 feet long. The lime and alum are agitated in the water as it passes over and under the baffles, which are about 20 inches apart from one end of the mixing chamber to the other. The baffles extend alternately from the top to within 18 inches of the bottom, and from the bottom to within 18 inches of the top of the chamber.

Coagulation Basin

From the mixing chamber the water enters the coagulation basin through a flume 30 inches square which runs across the end of the basin. The basin is 85 feet long, 75 feet wide, and 13 feet deep, with a capacity of 500,000 gallons of water. It is divided into three compartments by two concrete walls, to facilitate washing the basins. The chemically treated water is passed slowly through these basins while the floc and entrained impurities settle out. The settled water flows over a submerged weir and through a 12-inch pipe line to the filters. The period of detention in the coagulation basin is about five hours under ordinary operation.

Filters

The filters are built of concrete with 30 inches of sand and 20 inches of gravel. There are seven sizes of gravel, ranging from 2

inches down to pea gravel. The gravel is underlaid with cast iron pipe laterals which conduct the water to an effluent pipe 15 inches in diameter. The plant consists of five filters, each with a capacity of 750,000 gallons per 24 hours.

The filters are in a fireproof brick building, in the basement of which are the necessary pipes and valves and on the second floor of which is the laboratory. On the operation floor are the valve stands, all of which are operated by hand. Each filter has a rate-of-flow gage and a loss-of-head gage. The rate of flow is controlled by a Simplex rate controller.

Wash-Water Tank

The elevated wash-water tank is located near the filter building, and the rate of flow from the tank for washing is controlled by an automatic controller. The wash-water tank is automatically filled by standpipe pressure. When it is necessary to wash the filters, the wash-water valve is opened and the water enters at the rate of about 2,600 gallons per minute. From three to five minutes is necessary to wash each filter according to its condition. The tank holds 50,000 gallons of water and remains full all of the time.

Clear-Water Well

From the filters the water travels through the 15-inch pipe to the clear-water reservoir, which is 72 feet in diameter and 18 feet deep, having a capacity of about 500,000 gallons. It is built of concrete and has a concrete cover. The water is sterilized with chlorine just before it enters the clear well.

Pumping-Station

There are seven pumps in the pumping-station, five of which are electrically driven, two being steam-operated emergency pumps. The water is pumped from the clear well to the standpipe, a distance of about 1½ miles. Water flows from the 200,000-gallon standpipe to the consumers by gravity.

Water Softening at Springfield, Ill.

By Chas. H. Spaulding

Superintendent of Filtration, Water-Works, Springfield, Ill.

THE water-softening plant at Springfield, Ill., has been in operation about ten months. In this short period it has met a variety of loads and conditions.

History of Springfield Water-Supply

During the past thirty-seven years Springfield has developed a ground water-supply in an effort to avoid the use of surface water. The development was first by means of infiltration galleries constructed through coarse gravel at a depth of about 25 feet. Nearly 3,000 feet of these tunnels were built, but as they became inadequate, wells were driven in the glacial drift of the river bottom and the supply augmented by adding more wells from time to time.

This combination has usually yielded a fairly potable supply, but not without serious faults. The ground water contained iron in such quantities that meters and service pipes required frequent repairs and replacements, plumbing and laundry were stained, and any unusual currents in the distribution system produced roily water at the taps. Moreover, the hardness of the water was a source of needless expense to users in excessive soap required, repairs to water coils and heaters and plumbing in general. Furthermore, the ground water required chlorination to reduce the bacterial content to the minimum required by the standard of the U. S. Treasury Department. Finally, it was becoming increasingly difficult to obtain a sufficient quantity from this source. At the same time, the pollution of the Sangamon River increased so that the use of this supply to make up the deficiency became more and more a menace to health of the city. A study of these problems over a period of ten years or more led to the construction of a water-softening plant capable of handling either surface or ground water.

New Water-Softening Plant

The raw water is collected in a well 60 feet in diameter by 53 feet deep, to which it flows by gravity from the galleries or the river or is pumped from the tubular wells. Low-lift pumps deliver the raw water from this reservoir to the dosing well at the end of the headhouse adjoining the chemical preparation room, where lime and coagulant are added. Thence it passes to two parallel reaction chambers, where it is stirred by mechanical agitators revolving at 0.6 r. p. m. The chambers are 42 feet 8 inches in diameter, and the speed of the paddles at the two-thirds point is therefore 0.8 feet per second. The mixing period is forty minutes at the nominal plant capacity of 12 m. g. d.

From the mixing chambers the water passes

OPERATING COSTS

	Cost per Month				Cost per Mill. Gals.			
	July	*Aug.*	*Sept.*	*Oct.*	*July*	*Aug.*	*Sept.*	*Oct.*
Lime	1,467.50	1,990.35	1,643.20	1,435.55	8.00	7.87	7.44	6.70
Coagulant	335.36	481.60	173.43	81.78	1.83	1.91	.78	.38
Chlorine	63.05	73.30	62.00	42.10	.34	.28	.28	.20
Misc. sup. and expense	157.85	216.04	180.77	22.11	.86	.86	.82	.10
Maintenance	17.00	26.13	16.00	0	.09	.10	.07	.00
Labor and superintendence	1,111.40	1,191.99	1,178.80	1,141.00	6.06	4.72	5.23	5.34
Low-lift pumping	546.73	766.90	570.30	588.00	2.98	3.04	2.58	2.75
Misc. elec. current	172.00	158.20	171.30	160.50	.94	.63	.78	.75
TOTALS	3,870.89	4,721.01	4,139.30	3,582.54	21.10	19.41	17.98	16.22
Mill. gals. delivered	183.37	252.57	221.21	213.98				
Cost per mill. gal per p. p. m. hardness removed	.164	.139	.127	.103				

through two Dorr clarifiers in parallel, thence through settling-basins having carbonating chambers at the outlet ends, and finally passes to the eight filter units of the rapid sand type. The detention period in the Dorr clarifiers is one hour and thirty minutes, and in the settling-basins four hours. The carbonating chambers provide thirty minutes further detention.

A feature of the plant which proved valuable during high water is the continuous removal of sludge from the clarifiers. For a period of six weeks it would have been impossible to drain the basins for cleaning, and if sludge storage had been provided for such a period the basins would have been necessarily larger.

Another satisfactory feature of the Springfield plant is the lime-unloading equipment. Quicklime is used because of its lower first cost and higher softening value as compared to hydrated lime. The material is received in bulk and unloaded by means of a vacuum conveyor which lifts it to the third floor of the head-house, where a screw conveyor distributes it to the three lime bunkers. One man unloads thirty tons of lime in from four to six hours without discomfort or undue exertion.

Lime-weighing hoppers are conveniently located beneath the lime bins. After being weighed, the lime is dropped into slackers and thence into the batch tanks located in the basement below. From these tanks the lime suspension is pumped to the wet feed machines over the dosing well. Steam jets were originally provided for this lift, but the discharge line just beyond the jet would scale up with a flinty lime deposit in about one week, so that the 2-inch pipe was reduced to about ½-inch opening. It was decided to substitute a small centrifugal pump, and but little trouble has been experienced since this change was made. For the benefit of others who may have trouble with lime stoppage on solution lines I will say that one of our men found if he threw one of the plugged nipples into a fire it would explode and blow itself clean. It is a rapid method and should be used with caution.

A glance at a brief summary of some of the chemical and bacterial data on plant operation shows the sort of work the plant is doing. No very high turbidities have been encountered, but the reduction through the basins and filters has been satisfactory. The filtered water always appears bright and sparkling in the gate chamber of the clear well even though the turbidimeter shows measurable values.

Hardness removal was begun gradually in July. September floods cut off the lime supply temporarily and made economy necessary, resulting in somewhat harder effluent. October showed about what could be expected from the well water without over-treatment or the use of considerable coagulant. Results in August indicated that if satisfactory river water were available, a softer effluent might result. Coagulant cost, however, would be higher in this case.

The sanitary quality of the raw water has fluctuated widely. The load depends primarily

OPERATION STATISTICS

	July	Aug.	Sept.	Oct.
Mill. gals. delivered	183	252	221	214
Rate of filtration	1.63	1.53	1.44	1.31
Length of runs	21.2	24.0	42.4	57.9
Per cent wash water	3.0	3.1	2.8	1.5
Chemicals per Mill. Gals.:				
Lime	1,500	1,530	1,493	1,330
Aluminum sulphate	131	132	56	27
Chlorine	3.4	2.9	2.8	1.9

CHEMICAL AND BACTERIAL RESULTS OF WATER PURIFICATION

	July	*Aug.*	*Sept.*	*Oct.*
Turbidity:				
Raw	38.0	64.0	24.0	9.0
Applied	2.0	3.5	3.5	3.0
Filtered	0.3	0.3	0.3	0.2
Hardness:				
Raw	274	232	267	260
Filtered	145	92	125	102
Total Count Bacteria per cc. 37½° C 24 Hr.:				
Raw	420	3,988	395	321
Clarified	106	141	73	13
Applied	64	58	44	11
Filtered	36	22	10	5
Final effluent	13	5	4	2
B. Coli per 100 C. C.:				
Raw	64.0	7,000.0	1,558.0	242.0
Clarified	5.0	139.0	49.0	37.0
Applied	11.0	44.0	6.0	8.0
Filtered	0.0	3.2	1.0	0.7
Final effluent	0.2	0.2	0.0	0.2

on the proportion of river water used; thus, August, the month of greatest daily pumpage, showed the highest counts, especially in the B. Coli index. The B. Coli index of the Sangamon River at Springfield is in the neighborhood of 50,000 per 100 c.c. during normal stage. If we were compelled to depend on the river for as much as half our supply, we should have a real problem.

During the first few weeks of operation in July the supply was drawn almost entirely from the wells and gallery. Small quantities of river water were used during September and October, but sufficient to bring the averages up. It is interesting to note that at this plant the most important removal occurs in the first two hours of sedimentation, as shown by the clarifier effluent. The additional six hours which the water had in the settling-basins had relatively much less effect. The filters show fairly high efficiencies.

Turning next to operation statistics, we may note first that the length of filter runs has increased during September and October and wash water has decreased to 1.5 per cent. Wash water is not a major item of cost at present, as it is discharged to a sump and returned to the dosing well, so that the only loss is the pumping cost.

Lime now averages 1,330 pounds per million gallons. During the last two weeks of October no alum was used, and chlorine was also discontinued, since B. Coli was rare even in the clarifier effluent.

A study of costs during these first months is interesting, for it appears that if sufficient ground water were available it might be cheaper and certainly would be more sanitary. A number of economies, such as coagulant, chlorine, return of wash water, and less supervision, may well balance the cost of pumping and maintenance of wells. The total purification cost during October, 1926, was $16.22 per million gallons (exclusive of fixed charges). This may be compared with $19.41 per million gallons when 10 to 20 per cent of river water was used. It will doubtless be necessary to use some river water as in the past. On the other hand, it is plain that the wells will be the preferred source until the river shows marked improvement.

ACKNOWLEDGMENT.—From a paper read before the Iowa Section, American Water Works Association, at St. Louis, Mo.

Comparative Tax Tabulation for Florida Cities

WHILE it is obvious, of course, that a low tax rate or a small bonded debt is not in itself conclusive evidence of efficiency in city government, figures comparative with those of other cities are of real interest to taxpayers.

The accompanying tabulation is from a full-page advertisement of the city of Tallahassee, published in the *Florida State News* for February 20, 1927. In suggesting that readers of THE AMERICAN CITY might be interested in these figures, B. H. Bridges, City Auditor and Clerk of Tallahassee, writes:

"The particular figures which are attractive to us when compared to others are the per capita taxation of $8.70, and the per capita bonded debt of $64.90. I feel that this is a remarkable comparison for our city in view of the fact that practically one-third of the property in Tallahassee is exempted because of its being the capital of the state and the seat of Florida's only college for women. In addition, our per capita bonded debt includes the bonds for our light, gas, and water plants, which is practically one-half the total of all bonds."

Readers interested in the Florida tabulation will also find data of value to them in the advance printing of figures from the forthcoming Census Bureau report on Financial Statistics of Cities, on pages 516 to 521 of this issue. Similar statistics for larger cities will be found on pages 352-357 of the March number, and pages 97-104 of the 1927 MUNICIPAL INDEX.

Statistics compiled from answers to a Questionnaire sent to City Managers and Mayors from February to November 1926 by E. J. Donnelly, Apprentice City Manager and Assistant City Engineer of West Palm Beach, Florida, December 4, 1926.

	CITY	Population	Area Sq. Mi.	Pop. Sq. Mi.	Bonded Debt	Bonded Debt Per Capita	Assessed Valuation on 100% Basis	Actual % Assessed	Valuation Per Capita	Rate of Taxation	Rate on 100% Valuat'n	Amount of Taxes	Amount of Tax per Capita
1	Miami *	225,000	62.0	3,629	15,312,000	68.05	667,595,000	25%	2,967	20 Mills	5.0 Mills	3,337,985	14.83
2	Jacksonville	133,866	37.8	3,594	7,879,000	57.99	158,403,920	50	1,166	21.9	10.9	1,734,523	12.77
3	Tampa *	130,000	140.0	928	5,379,901	41.38	172,089,000	50	1,324	25	12.5	2,151,116	16.55
4	St. Petersburg	82,382	55.0	1,498	.....	.....	177,396,000	60	2,153	10	6.0	1,064,376	12.92
5	Pensacola	45,000	9.0	5,000	2,135,000	47.44	40,000,000	58.8	889	20	11.8	470,237	10.45
6	West Palm Beach*	40,000	50.0	800	2,780,000	69.50	94,443,000	65.3	2,361	16.5	10.7	1,018,565	25.46
7	Orlando	32,000	12.0	2,667	3,695,000	115.47	116,667,000	45	3,645	21	9.5	1,102,500	34.45
8	Daytona Beach *	25,000	38.0	658	2,500,000	100.00	96,000,000	62.5	3,840	12.5	7.8	750,000	30.00
9	St. Augustine *	22,000	20.0	1,100	1,074,000	48.82	43,333,000	60	1,970	10.75	6.4	279,500	12.70
10	Ft. Lauderdale *	20,000	45.0	444	4,000,000	200.00	80,000,000	100	4,000	10	10.0	800,000	40.00
11	Hollywood *	20,000	32.0	625	1,200,000	60.00	.....	...	.....	...	...	.....	.....
12	Ft. Myers *	20,000	20.0	1,000	631,000	31.55	35,047,000	50	1,752	15	7.5	262,854	13.14
13	Bradenton	15,000	13.0	1,154	1,869,000	124.60	57,000,000	50	3,800	9	4.5	256,500	17.10
14	Sanford *	12,000	14.0	858	1,118,000	93.17	11,553,000	100	963	18	18.0	207,954	17.33
15	Ft. Pierce *	11,000	12.0	917	1,200,000	109.09	19,048,223	100	1,732	10	10.0	190,480	17.32
16	*TALLAHASSEE* *	*10,000*	*2.25*	*4,444*	*649,000*	*64.90*	*10,000,000*	*60*	*1,000*	*14.5*	*8.7*	*87,000*	*8.70*
17	Coral Gables *	8,000	13.0	615	550,000	68.75	100,000,000	50	12,500	10	5.0	500,000	62.50
18	Lake City *	7,000	4.0	1,750	461,000	65.86	5,000,000	60	714	21	12.6	63,000	9.00
19	Melbourne *	6,000	17.0	353	270,000	45.00	8,888,889	67.5	1,482	13	8.8	78,000	19.50
20	Winter Park *	4,500	30.0	150	154,000	34.22	4,000,000	100	889	30	30.0	120,000	26.67
21	Auburndale *	3,500	4.0	875	.....	.....	4,253,000	100	1,215	13.5	13.5	57,415	16.40
22	Fernandina *	3,500	2.25	1,551	200,000	57.14	5,140,000	60	1,468	14	8.4	43,176	12.34
23	St. Cloud *	3,500	2.0	1,750	500,000	142.86	8,461,000	65	2,418	20.5	13.3	112,750	32.22
24	Quincy *	3,400	0.5	6,800	198,000	58.23	3,000,000	100	882	30	30.0	90,000	26.47
25	Winter Haven *	1,000	...	...	0,000	00.00	1,434,000	60	1,434	23.25	14.0	20,000	20.00
26	Lake Maitland	600	4.50	141	137,000	228.33	2,030,000	50	3,383	13	6.5	13,195	22.00
	Totals	886,248	630.3	...	53,891,000	.....	1,920,369,132	...	.....	...	...	14,810,626	.....
	Average	.....	.....	1,386	.....	87.33	.....	...	2,217	...	7.7	.....	17.10

* City Manager City

Construction of Granite Block Pavements

By C. M. Pinckney

Chief Engineer, Public Works, Borough of Manhattan, New York City

A SPAN of nineteen centuries separates the narrow pavements of Pompeii, the oldest stone block pavements still in existence, from the latest stone block pavements being laid in Manhattan. The art of stone paving has changed from the use of large, irregular slabs to a neat rectangular granite block which, according to Manhattan specifications, must run from 6 to 10 inches long, 3½ to 4½ inches wide, and 4¾ to 5½ inches deep, and lay to an average ⅜-inch joint.

In 1880 the bituminous joint filler was introduced, and since that time many experiments and a great deal of research have been undertaken to produce a joint filler that will not be materially affected by climatic conditions, which is stable, waterproof, and noiseless, and will wear level with the granite. In the borough of Manhattan this question has resolved itself into the use of an asphalt filler having a penetration of between 60 and 70 and a melting point between 115 and 130 degrees Fahrenheit. The melting point is controlled in order that the filler may be heated on the street without elaborate heating apparatus, and the penetration is controlled so as to insure that it will flow readily into the joints.

In the borough of Manhattan the joint filler used is a mixture of asphalt paving cement and hot, dry sand in the proportion of four parts of sand to six parts of paving cement by volume. The use of this admixture was adopted after careful study, and it is my opinion that the addition of the sand increases the stability of the filler very materially, works great economy, and adds to the filler a certain wearing quality which is most desirable. We

Granite Block for City Pavements

Among the advantages of granite block pavements with asphalt filler for city streets are the following: It is easy to repair them and to install subsurface structures. With asphalt filler, the vibration of adjacent buildings is negligible. Such well-laid pavement is noiseless, skidproof, easily and satisfactorily repaired, and sufficiently smooth to compare favorably with other types of pavements; it is also among the most durable.

THE NORTH TUBE OF THE HOLLAND TUNNEL, NEW YORK, AT THE SPRING STREET SHAFT, SHOWING THE 4-INCH GRANITE BLOCK SURFACE WITH ASPHALT MASTIC FILLER AND COATING

GRANITE BLOCK PAVEMENT WITH ASPHALT FILLER, LAID ON WEST STREET, NEW YORK
A special type of asphalt grout mixer is shown in the foreground

find since the introduction of this sand into the asphalt cement that the filler does not run out of the joints on grades or into the gutters, where it is necessary to make a slightly higher crown than usual. The object of this joint filler is to keep the blocks upright to preserve their edges, to reduce the noise which naturally comes from a hard pavement, and to waterproof the pavement.

We find in Manhattan, where the streets are continuously being opened to repair and install subsurface structures, that the asphalt joint filler adapts itself to this situation admirably, in that the granite block filled with the asphalt joint filler can be easily opened without destroying the granite and can be restored and opened to traffic immediately.

In a city like New York, where the loads are exceedingly heavy and the speed of the vehicles is fast and where the surface of the streets is occupied to such a great extent by manhole heads, a great deal of vibration is set up. If the joint filler in a granite block pavement is such as to transmit this vibration to the curb and in turn to the sidewalks and to the adjoining buildings, a great deal of injury is done to the value of the building on account of vibrations. It has been found that where asphalt filler has been used for the joints of granite block pavements, the vibration transmitted to abutting buildings is negligible.

Inasmuch as the asphalt filler specified in Manhattan is obtained by the distillation of an asphaltic petroleum, it is essential that the method of refining be carefully examined and carefully studied. The method of preparing the filler for application and the method of application should be carefully controlled.

We find that the best results are obtained if the asphalt is maintained in the kettles on the street at a temperature of between 325 and 400 degrees Fahrenheit, which is determined by equipping the kettles with thermometers. The sand, all of which has passed a 10-mesh sieve and not less than 85 per cent a 20-mesh sieve, is heated to a temperature between 300 and 400 degrees Fahrenheit, the filler being poured into the joints between these limits.

When we began to use the admixture of sand and asphalt, it was the practice to mix the hot asphalt and sand in cans with a long spout and pour directly from these cans. Owing to the difference in specific gravity of the asphalt and sand and the consequent rapid subsidence of the latter, this method was discontinued, and in 1917 the asphalt and sand were mixed in wheelbarrows and the asphalt grout brushed onto the surface of the pavement and broomed into the joints.

A few years ago the method of mixing was improved by the acquisition of mechanical mixers of the pug-mill type. With this mixer the asphalt and sand are placed in the mixer in the proper proportions and the asphalt grout is then emptied from the mixer into wheelbarrows, dumped on the surface of the pavement, and broomed into the joints. Thousands of granite blocks removed for the purpose of inspection show that invariably the asphalt joint filler has filled the joint from bottom to top.

It is my opinion that a well-cut, closely laid granite block pavement filled with asphalt joint filler laid on streets of heavy or high-speed traffic, horse-drawn, motor-driven, steel-tired or rubber-tired, is eminently satisfactory. It is essentially noiseless, skid-proof, easily and satisfactorily repaired, and sufficiently smooth to compare favorably with other types of pavements, and is unquestionably the most durable type that has come to my attention.

ACKNOWLEDGMENT.—From a paper read before the Fifth Annual Asphalt Paving Congress, Washington, D. C.

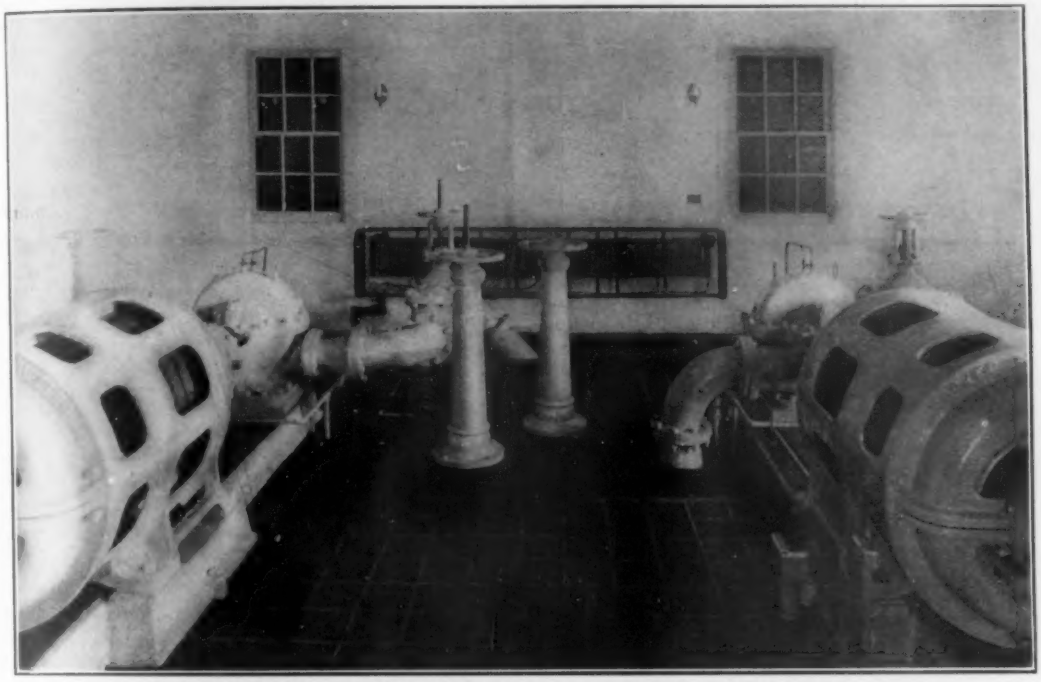
Automatic Heat for an Automatic Pumping-Station

FREEZING of the pumps in the automatic pumping-station of the town of Morristown, N. J., is prevented by the use of electric heat. The need of close control and the necessity for unattended operation eliminated the possibility of using fuel.

The pumping-station, a brick building about 22 x 29 feet in size, is located at some distance from the town and is exposed to the elements on all sides. In order to prevent the pumps from freezing in cold weather, a total of 30 kilowatts of electric heating units was installed, using General Electric Form-G oven heaters. Six of these units are now in operation, connected two in series, 3-phase, Y, on 440 volts.

The heaters, protected by a screen, are arranged along the north and east walls, near which the pumps and other equipment are located. The heaters are controlled with a standard automatic panel and Bristol temperature control instruments of the type ordinarily used with industrial ovens.

In order to secure the benefit of the minimum rate for power, it is necessary to cut out the heaters for several hours in the early part of the evening. With this in mind, the present installation was designed to maintain a temperature of 50 degrees during the day, as it was estimated that during the period the heaters are cut out, the temperature in the station would fall about 10 degrees. The minimum outside temperature was estimated at 10 degrees below zero.



AUTOMATIC PUMPING-STATION AT MORRISTOWN, N. J., HEATED AUTOMATICALLY BY ELECTRIC AIR HEATER SHOWN BEHIND VALVE-STAND

F. A. Hoffman, Department of Public Works, Morristown, says: "We found that the cost of heating this building in the coldest weather we have had so far would average about $20 per month, including current at 1½ cents per kilowatt-hour. The automatic control device has operated perfectly."

This Magazine Is Not Copyrighted

In quoting, please give credit to THE AMERICAN CITY.

Experience with the Minnesota Grade-Crossing "Stop" Law

By Frank W. Matson

Commissioner, Minnesota Railroad and Warehouse Commission

EXPERIENCE during the last two years has demonstrated the value of the Grade Crossing Law which went into effect in Minnesota on April 24, 1925, requiring the Railroad and Warehouse Commission to prescribe uniform warning signs for use at grade crossings and authorizing it to designate certain crossings as requiring additional warning signs or as calling for a sign bearing the word "Stop." Under this law all vehicles coming to crossings marked by such "Stop" signs must come to a full stop, and the driver must ascertain whether a train is approaching. Three types of warning signs were specifically mentioned in the law: a "home" crossing sign, for use in the immediate vicinity of the crossing; an approach crossing sign, to indicate the approach to a grade crossing; and the "Stop" sign.

One of the standard signs, as adopted by the Commission, is shown on the card reproduced on page 479.

Home crossing signs are erected and maintained by the railroad company; approach signs are furnished by the railroad company to the public authorities having charge of the highway, and are erected and maintained by these authorities; "Stop" signs are erected by the railroad company.

Vehicles carrying school children, or passengers for hire, or explosive or inflammable liquids, are required to stop at all grade crossings irrespective of their marking; this is also the case with tractors, or with vehicles towing others.

How "Stop" Crossings Are Selected

The Commission appointed an advisory committee composed of experts on signs, crossing protection, and road marking. This committee met several times and worked out specifications for signs to be used and suggested the following general rules:

Crossings outside of municipalities should be designated as "Stop" crossings:

1. Where the view of an approaching train within a distance of 500 feet in either direction from the crossing is obstructed from an observer at any point on the highway within a distance of 200 feet in either direction from the crossing.
2. Where the view of approaching trains within a distance of 1,320 feet in either direction from the crossing is obstructed from an observer at any point on the highway within a distance of 50 feet in either direction from the crossing.
3. Where a public highway adjacent or parallel to the right of way turns and crosses the right of way.
4. Where the smaller angle of the highway crossing is less than 60 degrees.

Where the highway crosses the tracks of more than one railroad company on rights of way which are parallel, the distance between the tracks, as well as obstructions, should be controlling features.

At crossings within municipalities, no rules as to distance and clearances can be suggested. The usual speed of trains passing through the towns, density of traffic, the location of buildings, their distance from the main lines and the practice of spotting cars adjacent to crossings must be given consideration in scheduling such "Stop" crossings.

Each railroad operating in the state was requested to submit a list of what it considered the most dangerous crossings on its lines and ones which should be designated as stop crossings. The Commission had printed a pamphlet containing the law, the specifications for the different signs to be used, and the suggestions outlined above.

Beginning in June, 1925, the Commission undertook an inspection of these crossings. From a total of about 13,000 crossings in the state, approximately ten per cent have been selected as stop crossings. Great care has been used in this selection, and the policy followed has been to refrain from designating a stop crossing if there was any doubt about its advisability. As vehicle drivers come to realize more and more what the law means as to safety for themselves, their families and their property, it is believed that, along with general observance of the law, there will be more and more requests for stop crossings. Some such requests have already been received.

No "Stop" sign has been ordered in without a personal inspection of the crossing by a member of the Commission, together with the engineer or assistant engineer of the Commission, and advice of the State Highway Department, the railroad officials, and municipal authorities has been sought. We have avoided the mistake of putting up these signs promiscuously at every crossing in the state.

Local Authorities Responsible for Enforcement

The Commission is not charged with the enforcement of the law. That is in the hands of the local authorities. The city of Minne-

apolis and many of the small towns have passed ordinances requiring all vehicles to come to a full stop at each designated crossing within their limits. These ordinances can and will no doubt be rigidly enforced and the effect will be far-reaching in commanding obedience to this law.

The Commission receives daily reports from various sources of the license numbers of automobiles ignoring the "Stop" signs. Names and addresses are looked up and a courteous letter is written calling attention to the violation and asking the driver's cooperation in the enforcement of the law. We get some very nice letters in reply and I believe this work is doing some good.

A Three-Year Comparison of Accidents

Of course, the best way to judge results of any safety measure is by the results obtained. The Interstate Commerce Commission's accident bulletin shows that in spite of the greatly increased number of motor vehicles in use in the state, the casualties at grade crossings are becoming less. The 1926 automobile registration for Minnesota was 637,000, an increase of 10.5 per cent over the previous year, whereas the number of fatal grade-crossing accidents was 14.7 per cent less, and the number injured was 5.3 per cent less. The three-year showing as to grade-crossing accidents is as follows:

	Accidents	Per 10,000 Automobiles
1924		
Killed	39	0.77
Injured	112	2.22
1925		
Killed	34	0.60
Injured	113	1.98
1926		
Killed	29	.46
Injured	107	1.68

The adoption by all states of a uniform law empowering the commissions to designate dangerous grade crossings at which drivers of automobiles and other vehicles must stop, as recommended by the National Conference on State and Highway Safety, is highly desirable, judged by the results obtained in Minnesota.

Progress in Grade-Crossing Elimination

The Minnesota State Highway Commission, in cooperation with the railroads, is actively endeavoring to eliminate grade crossings, both by re-routing trunk highways in connection with the road-building program, and by the construction of overhead or underground crossings, the railroads sharing the expense. Of 932 grade crossings in connection with the 7,000-mile trunk highway project which the Highway Commission took over in November, 1920, some 44 have been replaced by overhead structures, 80 by underpasses and 233 by re-location of the highways—a total of 357 eliminated under the Commission's commendable policy.

The splendid cooperation between all state departments and the railroads, and the educational campaign directed to the drivers of all motor vehicles, are beginning to bear fruit. It will take further time to accomplish our ambition of making Minnesota nationally known for its minimum number of highway grade-crossing accidents, but our program has been continuous and our efforts in this direction are being rewarded.

Attention Auto Drivers!

Black Letters on Yellow Background.

Pursuant to Chapter 336, Session Laws of Minnesota for 1925, certain railroad crossings throughout the state have been designated "STOP" crossings. The crossings have been marked by signs as illustrated herein. A full stop by ALL automobiles is required at crossings so marked.

The law further provides that the speed of all vehicles approaching any crossing shall be reduced to such a rate that it can be brought to a full stop in case of necessity before reaching the nearest rail of the railroad track and to cautiously proceed over said crossing.

Vehicles carrying school children, explosives or inflammable liquids or passengers for hire, or any truck or vehicle having in tow any other vehicle or equipment, or any vehicle of a tractor or caterpillar type shall be brought to a complete stop before crossing the railroad tracks.

A penalty is provided for violation of the law and the regulation thereunder.

The object of the law, of course, is to protect the occupants of the automobile as well as the traveling public in general.

If automobile drivers will co-operate in the observance and enforcement of this law and its regulations, death and injury from grade crossing accidents can be materially reduced in Minnesota. Such a result is well worth special effort on the part of us all. May we count on your co-operation?

RAILROAD AND WAREHOUSE COMMISSION.
O. P. B. Jacobson, Ivan Bowen, Frank W. Matson.

CARD DISTRIBUTED TO AUTOMOBILE DRIVERS BY THE MINNESOTA RAILROAD AND WAREHOUSE COMMISSION

A Pictorial Plea for City Beautification

IN its recently published Thirty-seventh Annual Report, the City Parks Association of Philadelphia, of which Andrew Wright Crawford is Recording Secretary, presents an exceptionally impressive pictorial record of some of the best and worst examples of "progress" in the development of the Philadelphia region. Several of these illustrations are reproduced on this and the next three pages.

Pointing out that when the War Villages were built, sneerers said to "wait until they ceased to be under Government control and their charm and value would be gone," the Association submits the accompanying photographs of the Fairview development as a conclusive answer to the pessimists.

The acquisition and preservation of creek valleys, rocky bluffs and other natural beauty-spots much more suitable for parks than for other development are urged in the report. It

VIEW FROM THE CENTRAL SQUARE, FAIRVIEW

BACK YARDS OF WORKMEN'S VILLAGE AT FAIRVIEW

The City Parks Association suggests a comparison of these with the back yards of Walnut, Locust, Spruce, and Pine Streets, Philadelphia

is pointed out that all the valleys in the vicinity of Philadelphia will meet the same fate as that shown at the bottom of page 482, unless taken as parks.

In commenting on the illustrations reproduced on page 483, the report states that the present disgraceful condition of Market Street can readily be corrected by enforcement of an existing ordinance which forbids the projection of signs more than two feet over the building line.

Recognizing the well-deserved pride which Philadelphia takes in its suburbs, Mr. Crawford says:

"But the central areas and most of the closely built-up areas of Philadelphia are as unattractive as the suburbs are attractive.

"Where parks exist, they themselves are beautiful. Where playgrounds exist, obviously, they also can be beautiful, and we hope that the next administration will make them so. This beauty should be extended by means of trees all over the city, and the building of the undeveloped areas for health and beauty should be furthered through zoning."

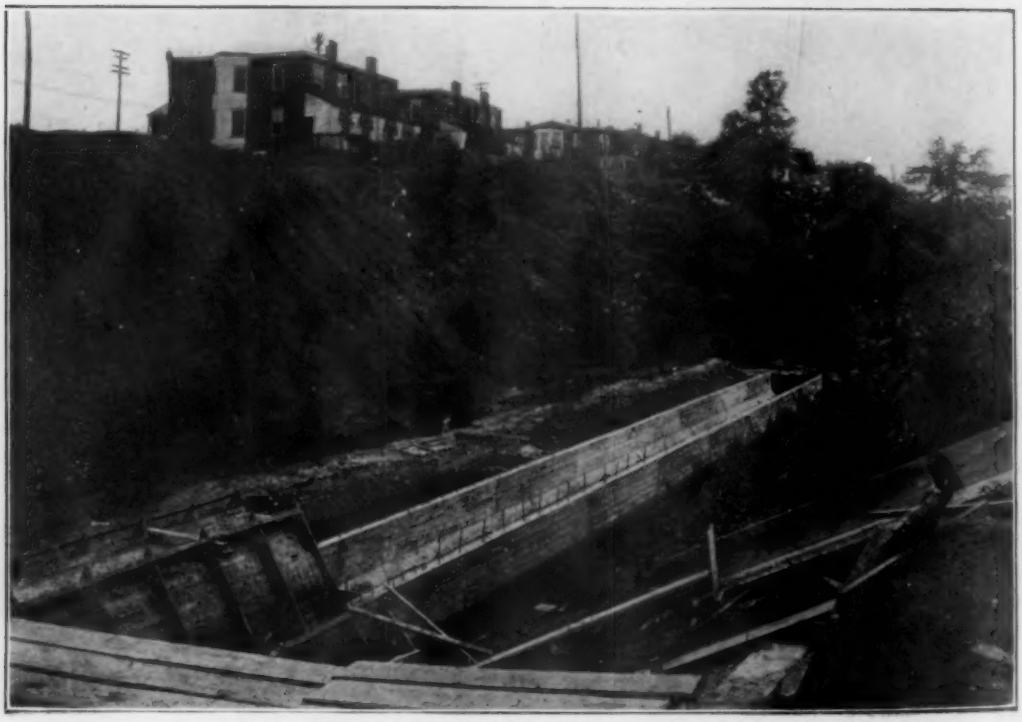
STREET PLANNING IN THE VILLAGE OF FAIRVIEW

CIRCULAR PARK AROUND CROSSROAD AT FAIRVIEW

Such intersections add to the attractiveness of the village and serve as important safety devices

Are the Valleys and Ravines in Your City and Vicinity Meeting a Similar Fate?

WHAT NATURE HAS DONE FOR DARBY CREEK



DEATH AND BURIAL OF A TRIBUTARY TO DARBY CREEK

What "Progress" and Commercialism Have Done to an Important City Thoroughfare

OLD HIGH STREET, PHILADELPHIA, AS REPRODUCED AT THE SESQUICENTENNIAL

HIGH STREET'S SUCCESSOR—THE PRESENT MARKET STREET OF PHILADELPHIA

Designing Highways for Safer and Speedier Traffic

By William Stickel

County Engineer, Essex County, N. J.

1. Pavement Widths

THE pavement of every improved rural highway should be wide enough for at least two lines of traffic. Every pavement on a city street should be wide enough for at least three lines of traffic without street cars and four lines with street cars. These requirements are minimum.

A traffic lane should have a minimum width of 10 feet; the minimum width, therefore, of the approved rural highway should be 20 feet. It is assumed that this entire 20 feet is continually available for traffic. Only in rural districts, however, will this width of roadway be advisable. As soon as a highway has been improved or is built between two important points, it will demand a wider width of pavement. The next width would be three lanes of traffic. It is almost universally agreed, however, that a road of three lanes of traffic is justified only from an economic standpoint. Unless the road connects the suburban with the urban section of a community, thus creating heavy traffic in one direction only, namely, to the city in the morning and out of the city at night, a three-lane traffic road becomes dangerous. This is easily understood by any one who has used such a highway. If a three-lane highway is constructed, it is well to actually mark the three lanes. An excellent example of this is found in the state of New York, where two lanes of concrete approximately 9 feet wide have been separated by a center lane, also 9 feet wide, constructed of either penetration macadam or bituminous pavement. Investigations have proved that this tends to assist in eliminating confusion.

Pavement on city streets will best meet the needs of the traveling public if four lanes of traffic are provided. This will allow the fast-moving vehicles to use the inner two lanes, and the slow-moving vehicles the outer. If parking is allowed on the side of the street, additional width should be supplied.

2. Position of Street-Car Tracks

In suburban streets carrying both street cars and heavy motor traffic, street cars should generally be given exclusive space in the center with a roadway on each side. In rural districts where car lines parallel roadways, the tracks should remain continuously on one side.

Following this plan, the heavy motor traffic which is paralleling the street car in suburban streets will have an unobstructed right of way. Should such streets run through business sections, it is possible for automobiles to park without interfering with the trolley traffic. In rural districts, however, where the pavement is possibly narrower than in suburban streets, it is best to combine the two lanes of traffic into the one roadway and to place the trolley tracks continuously on one side of the road, thus making each a separate item.

The Committee on Engineering and City Planning

of the New Jersey Conference on Street and Highway Safety, of which Mr. Stickel is Chairman, submitted the accompanying document as its report at the state-wide meeting of the Conference held in Newark, February 10. While giving consideration to the facilitation of traffic on the streets and highways, the committee studied the subject primarily from the viewpoint of safety to the traveling public. The conclusions here stated, if followed out, the committee believes, will produce a decided increase in the efficiency and use of rural highways and city streets.

3. Rights of Way

Right-of-way widths for future roadway widening, for parking space, for clear views of curves and intersections, should all be acquired before the cost of land becomes prohibitive.

It seems hardly necessary to enlarge upon this thought, and still there are opportunities offered to engineers and to public bodies to provide rights of way of sufficient width to answer the requirements of the future. Wherever this is possible, enough emphasis cannot be placed upon the desirability of proceeding in this matter at once. We find that what were rural districts yesterday become suburban and even urban districts within a few years. Probably the worst obstruction to the widening of roads is the rural garage or general store which is generally placed directly on the property lines of an important intersection. If this condition can be eliminated by providing a proper width of right of way and widening of corners a great deal of expense in the future development of the road can be eliminated.

4. Graded Width for Parking on Side

Rural highways should be graded of sufficient width to make it feasible to prohibit parking or stopping on the paved portion. This is decidedly so where only two lanes of traffic are provided. The flow of traffic should be unimpeded, and unless parking vehicles are stopped entirely free of the pavement, confu-

sion and accidents will follow. The additional graded width can be constructed of a good earth material or gravel and provide a well-drained and firm foundation during most of the year.

5. Six Per Cent Grades Most Economical

Grades in excess of 6 per cent should be avoided where economical and practical on thoroughfares of primary importance. It should be the aim, however, of the engineer to adhere to this principle. Where grades exceed 6 per cent, construction will be materially increased in cost on account of the type of pavement required and other features of construction. If the cutting of the grade of the road to 6 per cent destroys the value of adjoining property or makes the intersections of other roads impossible or expensive, the engineer is justified in meeting these conditions by the construction of grades approaching as near as possible to 6 per cent.

6. Curves

Primary roads and highways should not be laid out with curves exceeding 6 degrees or a radius of approximately 950 feet. A combination of heavy grade and sharp curve should be absolutely avoided.

If it is impossible to provide a curve not exceeding 6 degrees, a remedy is offered in the widening of the road at the curve points. Thus, a road 30 feet wide at either end of the curve can be widened to varying width approximating 40 feet at the center of the curve. Thus vehicles can spread out in approaching the curve and minimize the danger of collision and other accidents.

7. Crown of Pavement

Crown of pavement should be as flat as drainage conditions will permit, and generally should not exceed a crown of ⅜-inch to the foot. Curves should be mooned on the inside, banked and provided with transition curves between the straightaways and beginning and end of curves. The crown of the pavement is dependent upon the grade of the road and should be governed accordingly. Care must be taken that on steep grades the water does not run down the center of the road but is shunted off into the gutters. The banking of curves will create conditions in drainage which must be carefully considered.

8. Length of Clear View

Grades should be so established on primary highways that a clear view for approaching vehicles for at least 300 feet is obtained. This also applies to vision at street intersections and at curves. The method of supplying this necessary vision to the automobilist is as above described, namely, the widening of streets at curves. The acquisition of property at main intersections, as herein before mentioned under right-of-way widths, will provide the necessary vision and thus eliminate danger of collision.

9. Guard-Rails

Guard-rail of substantial type on the shoulders of all embankments. The shoulder should extend at least 18 inches beyond the guard-rail posts in order to provide secure foundation. The guard-rail shall be constructed of posts of either wood or concrete sufficient to withstand impact and shall be connected with a heavy cable or wire mesh of a standard quality. An excellent guard-rail can be constructed of concrete posts, reinforced with steel approximately 10 or 12 inches square, 7 feet long, placed 3½ feet into the ground and approximately 10 feet apart and connected with a heavy cable properly drawn and supported at the end posts. All guard-rails should be of a color distinguishable readily at night.

10. Grade Crossings

Grade crossings should be eliminated on all primary highways. The creation of new grade crossings should be discouraged in all cases. The importance of this conclusion is known to all and needs no discussion further.

11. Width of Bridges and Culverts

The minimum width of bridge or culvert on any highway should be at least 22 feet in the clear to permit two lines of traffic. One-way bridges should be eliminated in all cases. On long bridges, sidewalks should be provided or a safety zone built outward on the bridge to permit of the safety of pedestrians.

If a street is paved curb to curb, the bridge crossing under said street should be wide enough to allow the pavement to be carried across without decrease in width, and a sidewalk provided.

12. Detours

Detours around highways under construction or reconstruction should be carefully selected and maintained in a safe condition. This conclusion concerns a very serious condition in highway construction. The contractor should be required to place at either end of the closed section of the road a well-defined detour sign on which should be shown a map indicating the point at which the automobilist is and directing him by means of arrows along said map to his destination. Thus the automobilist has an idea, before proceeding on the detour, as to his general direction. All angle points and turns on detour must be well marked and the roadway maintained in a safe condition.

13. Danger Signs

Cautionary or danger signs should be erected and maintained at all danger points such as street intersections, curves, railroad crossings, steep grades, etc. These signs should be uniform and in accordance with the standardization of the state.

14. Maintenance and Snow Removal

Pavements and shoulders should be maintained at all seasons of the year. On main highways this will require the removal of snow during the winter months. On main rural highways snow should be plowed to permit a minimum of two lines of vehicles at all times.

The question of maintenance and snow removal is one which is being given more attention than in the past. Highway maintenance cost can easily be decreased if proper methods are pursued. The early removal of snow and the constant operation of the force during the storm will reduce the total cost materially.

15. Illumination

Proper illumination of city streets is necessary to eliminate as much as possible the necessity for the use of bright headlights. The proper illumination of main rural highways is recommended wherever financially possible.

The decrease in crime due to properly lighted streets is proved by statistics. The safety of pedestrians is greatly advanced by the same method.

16. Highway Efficiency and Safety

The proper location of playgrounds, firehouses, and other public buildings will greatly increase the efficiency and safety of the highways. Parks provided near congested districts will provide playgrounds for children, thus keeping them from using the streets. Firehouses located on secondary streets will eliminate congestion at the time of alarm and thus will increase the efficiency of the main highways.

To Limit Encroachment of Buildings on Street Lines

THE acute and growing need for making available for vehicles and pedestrians every foot of space on heavily traveled streets, has resulted in a condition in New York City which may well serve as a warning to smaller municipalities. The following statement on this subject is from a recent press release of the Committee on Public Information of the American Institute of Architects, based on an investigation made by the Committee on Civic Improvements of the Institute's New York Chapter, of which Harvey Wiley Corbett is Chairman, and a committee of the New York State Title Association headed by Earl B. Lovell, with Cyril H. Burdett as Secretary.

In submitting the report to the Institute, Mr. Corbett said:

"This matter covers the most important question affecting city architecture which has occurred in years. All projections of any kind whatever beyond the building line are a blot on the title and may result in making the property unmarketable. Title companies will not guarantee titles without making an exception to all these projections. The city has no legal authority to permit such projections. Architects should know this and call the owner's attention to it."

The report advocates "reasonable ornamentation" of building fronts, declaring that "its absence would give the appearance of a street of factories, rather than of apartments and office buildings." Some way must be found, it adds, to obtain ornamentation without encroaching on the street.

"It has heretofore been customary, in the city of New York at least, to erect in many residential sections as well as business sections, the main wall of the building exactly on the street line, and then to attach cornices, pilasters, and other ornamental projections, in some cases extending over the sidewalk and encroaching on the street.

"Such projections are recognized in the Building Code, and the rules governing them are set forth in Section 170, Article IX, in the Code of Ordinances of the city of New York. These encroachments consist of columns, pilasters, and ornamental projections which are allowed up to 18 inches. Base courses may extend 5 feet above the sidewalk to the extent of 10 inches beyond the building line. Rustications and quoins may extend not more than 4 inches.

"It should be noticed, however, that the section expressly provides that no part of the building so permited to project shall be so constructed that its removal may not be made any time without causing the building or any part thereof to become structurally unsafe.

"Under Section 171 permission to construct any part of the building so as to project beyond the building line is revocable by the Board of Aldermen or the Board of Estimate at will. It is very important, therefore, for architects to keep in mind the fact that the city may require the removal of all these ornamental projections, including stoops and areas. Within a few years, the Board of Estimate and Apportionment have rescinded all permits for projections of this kind upon Broadway, Fifth Avenue, Forty-second Street, Thirty-fourth Street, and other main thoroughfares, which removals have cost individual property owners thousands of dollars."

Refuse Collection and Disposal in Sioux City, and Elsewhere

By W. H. Carrigg

Superintendent, Garbage Department, Sioux City, Iowa

IN Sioux City, Iowa, all garbage and rubbish collection and disposal is handled by the city. The collection system covers the entire city, an area of approximately 47 square miles, having a population of 80,000. This territory is covered twice each week, and the congested districts three times a week. All collections are made with horse-drawn wagons. Each collector owns, operates, and maintains his whole outfit. The wagons carry a load of 4 yards and are covered with canvas tarpaulins when the load is completed and ready to be moved to its destination.

Householders are required to drain and wrap all garbage and to provide separate containers for all rubbish, but rubbish is hauled separately. In localities where there are alleys, all garbage and rubbish containers must be placed on the alley line, and in districts where there are no alleys it is required that the householder place the receptacle on the parking area between the sidewalk and the curb where it is easily accessible to collectors. The containers are taken in when the contents have been removed by the collector. There are regular days for all collections, and every effort is bent toward making the collection punctual, that is, at about the same time on the specified days. This gives the citizens an opportunity to remove the containers from the parking strip so that they will not appear unsightly.

Rubbish is used to make sanitary fills, thus saving thousands of dollars to taxpayers, as the city would frequently find it necessary to make long hauls with dirt. The topography of the city greatly facilitates the ash and rubbish problem in that there are numerous ravines and hollows where this material can be deposited. Garbage is sold to a hog feeder, who pays the city $250 per month. His hog-feeding yard is centrally located and in this way long hauls are avoided. The longest haul is five miles and the average haul two miles. I would not be so bold as to assert that this method of disposal is as sanitary as incineration, but it is more economical, and when, as in Sioux City, it is possible to sell the garbage to the operator, it is lucrative, as well.

The vital facts that interest all municipal officials and taxpayers are efficiency and net cost. In Sioux City, we collect 7,000 tons of garbage and 18,000 tons of rubbish annually and keep within an appropriation of $50,000, including the upkeep and operation of a small coupé, which is our only expense other than wages. This is less than 60 cents per capita when the department is credited with the $3,000 secured annually from the sale of garbage.

Garbage and Rubbish

RULES PERTAINING TO COLLECTION

Rule. 1. GARBAGE, as the word is made use of in these rules, shall consist of solid or semi-solid kitchen refuse subject to decay or putrefaction or in which flies or vermin can breed and live, and market wastes of animal and vegetable matter which has been or was intended to be used as food for man or animal.

Rule 2. RUBBISH, as the word is made use of in these rules, consists of refuse other than food stuffs, such as paper, clothing, glass, ashes, leaves, wood, grass, crockery, tin cans and sweepings.

Rule 3. RECEPTACLES FOR GARBAGE AND RUBBISH. The owner of every dwelling, and in case of a private dwelling, the occupant, shall provide for said dwelling and keep clean and in place, a metallic can or cans with tight fitting covers for the holding of garbage and rubbish. Cans shall be placed on alley or street easily accessible to the collector, and when filthy, leaking or in any way defective, must be removed and replaced by cans conforming to the provisions of this ordinance, and garbage chutes are prohibited.

Rule 4. Garbage, as herein defined, and rubbish, as herein defined, shall not be placed in the same can or receptacle but shall be separated and placed in cans as in these rules provided for, and it shall be unlawful to keep or deposit any garbage or rubbish on any street, alley, sidewalk, or upon any public or private grounds, or in any building, except in metallic cans with tight fitting covers, as heretofore and hereafter specified.

Rule 5. All garbage before being placed in garbage cans for collection shall have drained from it all liquid substances and shall be wrapped in paper; and all rubbish shall be drained of all liquid before being deposited for collection.

Rule 6. Report all dead animals, giving exact location of same; also complaints as to collection of garbage to the Mayor's Office. Bell phone, 1147; Auto 58894.

By order of **BOARD OF HEALTH and CITY COUNCIL.**

Most cities make a direct charge of at least fifty ($.50) cents per month for collecting garbage and rubbish. Do your "bit" to help make the cost to the public as light as possible.

HANG THIS CARD UP IN YOUR KITCHEN

CARD FURNISHED TO ALL HOUSEHOLDERS, WITH RULES PERTAINING TO COLLECTION OF GARBAGE AND RUBBISH, IN SIOUX CITY, IOWA

TWO OF THE SIOUX CITY, IOWA, GARBAGE-COLLECTING OUTFITS AT THE HOG YARD
The first of these loads was collected and then hauled three miles. The second is the second load of the day, but the haul was only one mile after completion

The question may be asked, "Do the citizens of Sioux City, Iowa, approve of their garbage collection system?" The only criterion is the number of complaints. During the six months from April 1, 1926, to October 1, 1926, which is the period of heaviest garbage collection, 76 complaints were received and investigated. Of these, 17 were found to be justifiable—less than 3 per month. Failure to collect where unjustified complaints were received was due to the householder's negligence to comply with the rules and regulations which govern garbage collection. There must be complete householder cooperation for success.

VIRGINIA STREET, SIOUX CITY, SHOWING THE FILL MADE A YEAR AGO
This location is one block north from where dumping is now being carried on. The picture shows how the dumps look after being covered with dirt. The bungalows seen in the picture are all $6,500 homes, showing the character of the neighborhood. This entire street will be paved as soon as the fill is completed in the block where dumping is now going on

Collection Costs in Other Cities

We have made a special effort to secure comparative figures and statements regarding methods of operation in other Mid-West cities. St. Louis, which has a municipal garbage collection system, owns all the equipment. It collects no rubbish nor ashes. Its cost of garbage collection and disposal aboard a barge, for hog feed, is $5.40 per ton.

In Kansas City, Mo., where they have a contract system, the contractor receives $7.45 per ton for collection and disposal for hog feed. Neither rubbish nor ashes are collected, other than by private individuals, who make a direct charge to the householder for this service.

Omaha, Nebr., also has a contract system, but it differs from the Kansas City system in that the contractor is not paid by the ton, but by the month. He receives $4,500 per month for seven months, and $9,000 per month for five months. Collections are made twice each week in summer and once a week during the other seasons. Rubbish and ashes are handled the same as in Kansas City, Mo.

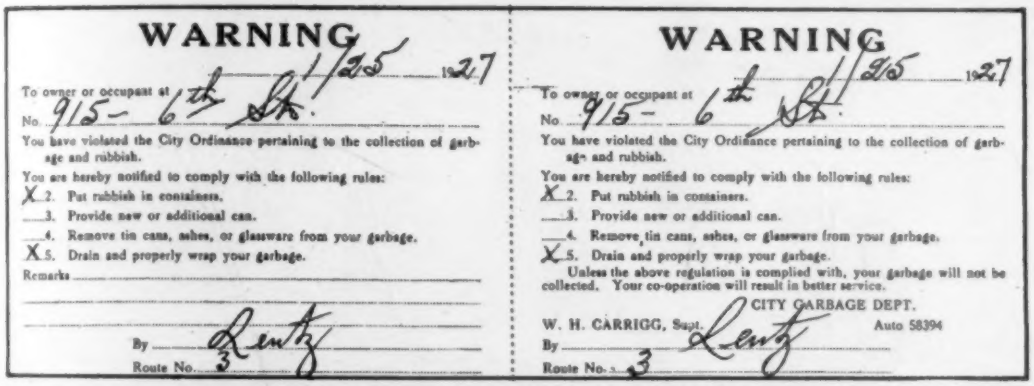
Sioux Falls, S. Dak., a city of 30,000 population, has an entirely different contract system from that of Omaha, or of Kansas City. There are sixteen private collectors who contract with the individual householders for a sum of from $12 to $20 per year, depending upon the amount of refuse to be hauled. They collect all garbage, ashes, and rubbish, but the cost of collection for the entire city is approximately $100,000 per year.

In St. Paul, Minn., the farmer-municipal combination collection system is in vogue. Certain districts are assigned to a few small hog feeders, and the rest of the city has municipal collection of garbage only. The city owns its own equipment and disposes of the garbage it collects to hog feeders. The collection costs $4.68 per ton. All rubbish and ashes are collected as in Kansas City, Mo.

Minneapolis, Minn., has practically the same system as St. Paul, except that the municipal department is entirely motorized and the city collects all the garbage. No ashes nor rubbish is collected other than by private haulers, who make a direct charge. Prior to the opening of the new incinerator, the collection costs, including delivery at the old incinerator, was $5.78 per ton.

Duluth, Minn., with a population of 105,000, has the same collection system as Sioux Falls, S. Dak., except that there are thirty-two private collectors instead of sixteen. The Health Commissioner, who supervises the collection, states that it was costing the residents of Duluth $375,000 annually for the collection of garbage, ashes and rubbish. Disposal of garbage is by incineration.

Winnipeg, Canada, has a municipal system similar to the one in Sioux City, Iowa, in that it collects all garbage, ashes, and rubbish with no direct charge to the individual householder. Its average collection cost for garbage, ashes, and rubbish is $4.08 per capita. The city owns part of the equipment and the rest is hired.



WARNING

To owner or occupant at 915 - 6th St. 1/25 1927

You have violated the City Ordinance pertaining to the collection of garbage and rubbish.

You are hereby notified to comply with the following rules:

X 2. Put rubbish in containers.
__ 3. Provide new or additional can.
__ 4. Remove tin cans, ashes, or glassware from your garbage.
X 5. Drain and properly wrap your garbage.

Remarks

By Lentz

Route No. 3

WARNING

To owner or occupant at 915 - 6th St. 1/25 1927

You have violated the City Ordinance pertaining to the collection of garbage and rubbish.

You are hereby notified to comply with the following rules:

X 2. Put rubbish in containers.
__ 3. Provide new or additional can.
__ 4. Remove tin cans, ashes, or glassware from your garbage.
X 5. Drain and properly wrap your garbage.

Unless the above regulation is complied with, your garbage will not be collected. Your co-operation will result in better service.

CITY GARBAGE DEPT.
W. H. CARRIGG, Supt. Auto 58394

By Lentz

Route No. 3

WARNING CARD, HALF OF WHICH IS LEFT BY COLLECTOR WITH HOUSEHOLDER, THE OTHER HALF BEING TURNED IN TO THE CITY GARBAGE DEPARTMENT

Municipal Collection Best

Municipal rubbish collection assures a cleanliness that cannot be attained otherwise. As for the private contract system paid for directly by the householders, it is entirely too expensive to be considered. The large contractor with thousands of dollars invested has his own interests at heart rather than those of the taxpayers. He must also have his percentage for supervision, which is about four times as much as the municipality pays for the same service. In addition to this, the contractor must be supervised.

ACKNOWLEDGMENT.—From a paper read before the International Association of Street Sanitation Officials, at St. Louis, Mo.

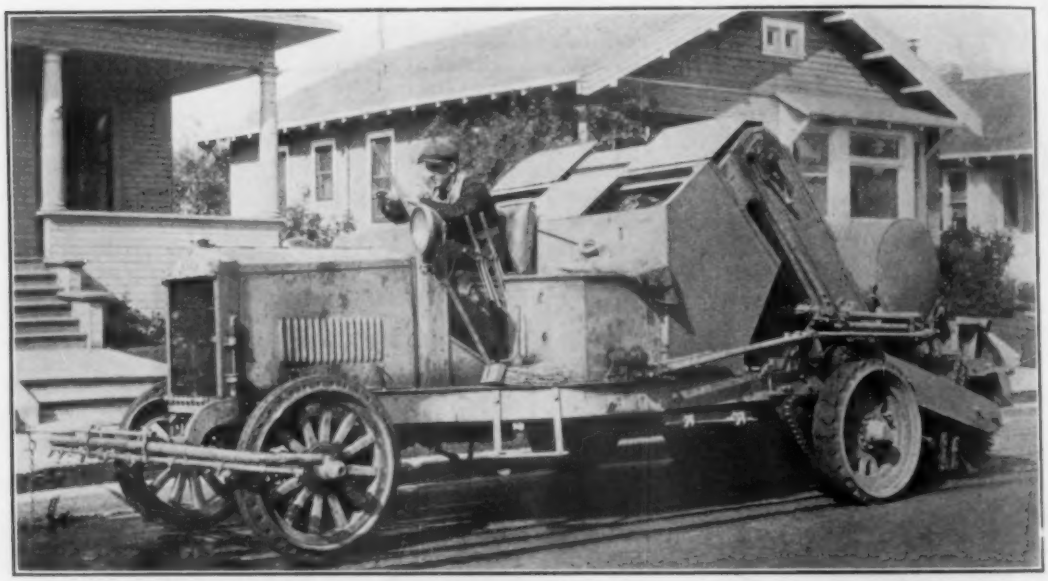
San Jose Reduces Street-Cleaning Costs by New Equipment

California City Saved More Than the Original Investment the First Year

THERE are times when true economy comes by spending money. You may have a leaky faucet in your home. You spend a little money and get it fixed. Next month the water bill is just that much less. A factory may be getting along nicely with the old machinery that father used, but if new machinery makes for greater production or cuts down operating costs, you say the man who does not invest in such machinery is unwise. We recognize these principles of economy when it comes to individual problems in the home and in the factory, but often we are handicapped by various reasons when it comes to carrying them over to problems of the city.

Just as an illustration of expense incurred because of lack of proper equipment—how much is it costing your city for the upkeep of the streets? Are you employing the older methods with inefficient machinery and many men? If you were properly equipped, could you not dispense with the service of at least half of these men and thereby cut down the street-cleaning budget to an extent that would almost pay for the proper and more adequate machinery? If so, then are you not justified in discarding some of the inherited equipment for the more modern methods?

Here is the way San Jose, Calif., a city of 75,000, has met the problem. Each year the paved street mileage has increased considerably through various causes. Certain outlying districts have been annexed, many heretofore unpaved streets within the old city limits are now paved, and many new subdivisions have been opened within the present city limits. All these things have added to the street mileage until now there are some fourteen million square feet of paving. And, as with most progressive cities, the question of street cleaning has become a bigger and more serious problem each year. Originally, all street sweeping was done by hand. Later, a cheap second-hand contraption for sweeping the streets was purchased. It wasn't such a bad machine in its day—but that day had almost passed when it was acquired by our city. It was better than the hand sweeping, but it wasn't the best, and it necessitated the employment of some thirteen hand patrolmen to follow up and sweep after it. In 1925 the city decided to spend a real sum of money, $8,000, for street-cleaning equipment. Naturally, as in most cities, there was much debate when it came to investing in expensive machinery. But, the issue won, and a modern motor pick-up sweeper was pur-



SAN JOSE'S AUSTIN MOTOR PICK-UP SWEEPER THAT EFFECTED SAVINGS IN STREET-CLEANING OPERATIONS

chased and put into operation.

The machine is the type that can do the work satisfactorily without employing a great force of men to keep it in operation or to follow up after it, for it sweeps the gutters clean. A gutter brush throws the gutter dirt into the path of the main rear brush, which gathers and elevates the dirt into a storage hopper. The old machine, formerly employed by the city, required hand men to follow, collecting gutter dirt. This meant a very large and constant upkeep expense for street cleaning. And hand work is slow work. Then, too, the hopper storage system makes possible the dumping of the dirt in regular lanes, which again simplifies the work of the pick-up crews. The machine adopted cuts hand work to a minimum. Machinery that can replace men in this fashion naturally is more expensive, but a great force of men are in most cases more expensive in the long run than high-grade machinery. This investment in good equipment has actually saved the city $10,000 of the yearly budget of $40,000 for street cleaning. It has done more than this—it has rendered a better and more efficient service. This pick-up sweeper covers approximately 170 miles of city streets each week.

When is spending money saving it? This is an example. It applies to all the workings of the city: the best and only the best of equipment in every department, the best bridges, the best buildings, the best and most modern of everything, for even the most modern gets out of date soon enough. The city is in business to stay. Spend money for the best, the most efficient. Second-hand or second-rate equipment is an expense. Efficiency in the city is as important as efficiency in the factory. Good equipment is good investment.

Should the City Engineer Be Under the Control of the Board of Public Works?

By David H. Harker

City Engineer, Frankfort, Ind.

THE question "Should the City Engineer be under the control of the Board of Public Works?" should, I feel from my experience, be answered in the affirmative. I believe that the City Engineer should be directly responsible to some body representing the city, and I know of no body which would fill that place more appropriately than the Board of Public Works.

There should be no question in the mind of anyone, as I see it, as to the sanity of the idea that the City Engineer should be responsible to some vested authority. Just as an engine needs a governor to keep it from "running away with itself," so sometimes the engineer needs some controlling apparatus to hold him level. It even occurs at times that as that same engine requires a flywheel to accumulate momentum to provide steady power, the Engineer occasionally needs some impelling device to push him along. And so a throttle in the form of the Board of Public Works is not only a necessity but in many instances a distinct help and advantage.

Nevertheless, certain difficulties arise at times between the Engineer and the Board of Public Works which cannot be avoided. These difficulties will come, and so should be expected. Is there danger of corruption creeping into the Board of Public Works through material interests and impeding the work of the Engineer? I should say that in most cases, especially in our smaller cities, the danger of corruption is slight. Is it a matter of the Board's interfering with the Engineer in what is considered "good practice" and substituting some amateur ideas? No, I have not found a great deal of trouble on that score. I have found the greatest variances with the Board of Works when the Board has attempted to intercede in behalf of some contractor or property owner who feels that he has been frightfully wronged.

Yes or No?

The question under discussion is a distinctly controversial one. Mr. Harker takes a very definite stand on one side and cites his experiences with his Board. The American City will be pleased to receive further discussions agreeing or disagreeing with the author, for later publication.

If corruption in the city administration is the trouble, then the Engineer is in a bad way and he had much better be out of a job. If the Board vetoes the Engineer's "good engineering practice," it will soon learn by experience and will give no more trouble; for when a Board's amateur ideas have gone wrong a

few times, the Board will begin to appreciate the Engineer's advice in engineering matters.

I will introduce here a personal reference or two, as this discussion is from the standpoint of personal experience. The Board of Works whom I represent asked me to lay out a winding drive through a park, which I proceeded to do. When I had spent an hour or so running-in a curve and setting pins at the ends of 25-foot chords on one particular curve, the Mayor and the third member of the Board came out and, looking over the job, decided that the curve was not just where it should be. So they set about promiscuously moving this pin and the next one back by eye until they had the curve set to their own satisfaction. But when they stood back to look it over, it did not suit them; so they began all over again, moving the pins about, until, when they had finished, they admitted that they had the curve back practically where I had originally laid it out. The difference was that my curve had been laid out as a true curve and theirs was by guess. This was not an engineering matter but only a job of surveying, but it illustrates my point. The Board learned that "good engineering practice" is better than guesswork and since that time, I believe, have respected my judgment a little more.

It has been my experience that the greatest difficulties may arise between the Engineer and the Board of Public Works through some misunderstanding between the Engineer and a contractor. We are engaged in building a sewage disposal plant in our city. We have a consulting engineer who is handling the work. One day the consultant suddenly came upon the job and found the contractor pouring concrete which was entirely too wet. The consultant ordered the contractor to stop the work and remove ten or twelve yards of concrete. I never have seen the contractor yet who delighted in such reverses, and this contractor was no exception. He sent for the Board of Works, and I happened to be the only one in the city. He explained to me how rude the consultant had been and asked me to give my opinion. This I cheerfully did. I advised him to speedily remove the concrete in question and to do whatever else the consultant engineer demanded. And I believe I was right.

Let me cite one other instance, one which was sadder for me. One of our contractors was building combined curb-and-gutter for the city under my supervision last fall during weather which was a little too cold to allow quick setting. I advised him not to pour concrete after two o'clock in the afternoon, as it would not set up sufficiently to permit proper finishing. But one afternoon I came along and found him still pouring concrete at four o'clock. When the forms were removed the next day, a very rough job was disclosed and in addition the contractor in his hurry had failed to meet proper grade alignment. I ordered out about 90 lineal feet of curb-and-gutter and went into the office. Before long the other two members of the Board of Works came in to intercede for the contractor. They sympathized with him in the story he told and thought probably the job was not so bad. They finally decided that 24 feet of the work was all that should be renewed. But the real result was more far-reaching than that. The Board allowed that contractor to win a moral victory over the Engineer, with the consequence that the Engineer was virtually no longer "boss" of the job. The thing that is lacking in a case of that kind is a complete understanding between the Engineer and the Board of Works.

In conclusion, let me say that whatever may be a City Engineer's difficulty with his Board of Public Works, he should thrash it out once and for all and arrive at a definite understanding with that Board. A governing and impelling hand is a necessary evil, and I believe the Board of Public Works is as adaptable to the purpose as any other city body.

ACKNOWLEDGMENT.—Adapted from a paper read before the Annual Road School held at Purdue University, Lafayette, Ind.

National Chamber Not Committed to State Supervision of Municipal Expenditures

BY a narrow margin the Chamber of Commerce of the United States escaped being committed, in its recent referendum, to the proposal "that each state should have an agency with power, upon local petition, to prevent unwise expenditures by local governments." The canvass of the votes, recently announced by the National Chamber, shows 1,506 votes in favor and 884 opposed to this proposal. It thus fell short of the two-thirds vote necessary to commit the Chamber on a proposition submitted by referendum.

Much more than the necessary two-thirds vote was registered in favor of the other proposals submitted, which included, among others, recommendations that intangible personal property should be taxed on the basis of annual earnings in lieu of any other taxes as to such property; that for any ad valorem tax intangible personal property should be classified and the rate should be low, with reasonable relation to earnings; that bonds should be used only for non-recurring capital expenditures; that serial bonds should be used for all issues; and that modern uniform accounting should be adopted for municipalities, with centralized state audit.

Control of Subdivision Development Advocated by Real Estate Boards

National Association Adopts Comprehensive Platform for Control of Subdivision Development in City Fringes; Recommends Master Plan Beyond Municipal Limits; Approves of Bond Requirements to Guarantee Improvements

RECOMMENDATIONS for the control by municipalities of urban growth in the areas constituting their fringe have been adopted by the National Association of Real Estate Boards following a two-year study of the problem involved. The Association, at its 1927 meeting in Miami, Fla., in January, adopted a report of its special committee which had been collecting data as to the methods which cities are devising to coordinate the growth of their semi-rural periphery, and which had had the cooperation of a similar committee representing the National Conference on City Planning and the American City Planning Institute.

The report, which is expected to have great influence in guiding the metropolitan growth of American cities, was presented by Irenaeus Shuler, of Omaha, Neb., as chairman. The recommendations center around (1) the making of a master plan for the expected expansion of the urban community, (2) authorization of definite control of subdivision development by the local planning commission, (3) extension of that control into non-municipal territory for a distance varying with the size of the city, and for the larger cities much more than three miles beyond the city limits, and (4) regulation, when practical, of the extent to which street improvements and water and sewer provisions must be made before subdivision plats will be given official approval. In advocacy of these recommendations, the report says in part:

"No other problem in our complex city life is so fundamental as the subdivision of land, because it is the initial step in the structure of the occupied urban community. New traffic conditions and new modes of living require that a very thorough study be made of platting the unbuilt areas in and adjoining our cities.

"The results of planning should be considered always from two angles—one, the effect on land values, and the other the effect on the community. We should not allow ourselves to become so idealistic in our desire to create a better community that in so doing we destroy real property values. On the other hand, we should not permit the landowner to do something for a quick, personal financial gain which would work a serious injury to the community and to other landowners.

"Wonderful progress has been made in the past five or ten years in subdivision work. This progress has been evidenced in the small as well as in the larger community developments. However, it remains a fact that the small tract oftentimes does not fit into anything in particular, but may look all right by itself until other small adjoining tracts are developed, and finally a network of misfits is the result—a conglomeration of neighborhoods, an unwieldly community. Re-sale values are at a discount in some of these subdivided neighborhood tracts because private restrictions established in the particular tract were ignored by adjoining landowners, and different or non-conforming use was permitted on adjoining land subdivided in the same community.

"In most cities planning commissions serve only as advisory boards, and the power of final legislative action is vested in the city council. We believe that state enabling acts should delegate direct to planning boards the authority to control the platting of land under regulations that have been approved by the municipal governing body, but subject to review by the governing body acting as Board of Appeal."

The Text of the Recommendations

1. That state planning enabling acts should be enacted, delegating to cities and counties the authority to prepare general plans and to approve subdivisions.

2. That under the authority of the state planning enabling act a master plan should be prepared for the area of control, showing the location of main thoroughfares, including recommendations for open spaces, and, in cities where the principle of zoning has been adopted and established, designating land areas for specific uses.

3. That the control and the platting of subdivisions should be authorized under the act, and this control exercised by the local planning commission.

4. That the planning commission should be an appointive, non-political board serving without compensation, and the members should hold no other municipal office, excepting that the mayor or chief executive of the city, the city engineer, and the city attorney should be ex-officio members of the commission.

5. That the master plan authorized and the control exercised should extend out beyond the city limits into the non-municipal territory which will sooner or later be developed as a portion of the city.

In most of the medium-sized cities, it has been customary to extend this control for a distance of three miles beyond the city limits. In the larger centers of population this control should extend to a much greater distance from the present city limits and in many cases the whole surrounding region should be planned as a unit.

6. That the planning commission be authorized to adopt regulations providing for the continuity and width of streets to safeguard travel and prevent undue congestion, and for proper grades on thoroughfares for drainage and travel, such regulations to include, where and when practical, the

size and area of building lots, and the extent to which street improvements such as water and sewer provisions should be made before approval of plats.

In some states and cities bonds are required from the landowner guaranteeing the installation of these improvements. This practice seems to be practical.

7. When and at the time a master plan is prepared, a survey of requirements for public parks, recreational spaces and school sites should be made, and the result of this survey should be included as a part of the master plan. If a landowner desires or offers to plat his land, and included in his land is a proposed public park or school site, the municipality should take immediate steps either to purchase the park or school site or to procure it by condemnation proceedings.

The entire community would benefit from the use of the public park or public school site, and it would be unfair for the small or individual owner to be required to denote land for this purpose, the report holds. The subdivider should be encouraged to provide small private recreational parks, but subdivisions vary so in size and topography that it would be unwise to offer this suggestion as a platting requirement.

In addition to Mr. Shuler the committee which made the report is as follows:

J. C. NICHOLS
Kansas City, Mo.
J. J. HURST
Baltimore, Md.
DON S. HELWICK
Cleveland, Ohio
R. G. LAMBRECHT
Detroit, Mich.
ARTHUR M. SUOR
Snyder, N. Y.
C. C. C. TATUM
Los Angeles, Calif.
GUY S. GREENE
Detroit, Mich.
ROBERT JEMISON, JR.
Birmingham, Ala.
N. J. UPHAM
Duluth, Minn.
LOU HARRINGTON
Chicago, Ill.

Protection of Roadside Trees in Maryland

By F. W. Besley

State Forester of Maryland

WHEN Maryland's extensive road-building program was commenced about twenty years ago, there was created simultaneously a roadside tree problem. It was inevitable that many thousands of trees along the highway should be destroyed or badly damaged, often needlessly, in road building.

Then the expansion of telephone, telegraph, and electric light and power companies, which extended wires along practically all the highways, threatened the life of the remaining trees. It had become common practice to hack the tops off the trees or to otherwise mutilate them to give clearance to the wires, or to cut the trees down entirely where it could be done with impunity. The farmers, too, often objected to trees along the roadway because they interfered with the field crops.

Such were the conditions in Maryland prior to 1914 when the first organized effort was made to protect the trees still standing along the highways. Through the work of a small group of people genuinely interested in improving the appearance of the roadways, the Roadside Tree Law was enacted, giving the State Forestry Department full authority in its administration. The law defined roadside trees as all trees planted by the forest wardens or existing trees 3 inches or more in diameter, measured 2 feet above the ground, and growing within the right of way of any public road, including trees under the police powers of the state; eliminated advertising signs within the highway limits and on private property where the owners' consent has not been given; placed the trimming or removal of roadside trees under a permit system, the applicant paying the cost of supervision and inspection; and provided for the planting of trees along the highways, either by the state, or in cooperation with individuals or organizations.

The Forestry Department was faced with a difficult problem. The immediate concern was to prevent the mutilation of trees and at the same time give sufficient clearance to wires so that uninterrupted service might be maintained. A conference was held between the Department and representatives of the pole line companies for the purpose of bringing out the main points of the problem. Principles were laid down and a working plan outlined, providing for state supervision by the forest wardens of all trimming under permits. While these companies protested at first against the restrictions, they are now cooperating in a most satisfactory way.

It often happens that a landowner wants to remove or trim a tree standing within the right of way of a highway. He, too, must secure a permit from the state, even though the applicant owns the land on which the tree stands.

The right of highway authorities to trim or remove trees interfering with traffic is recognized. Under agreement with the Forestry Department, district engineers in charge of state highways, and county engineers in charge of county roads, are commissioned as forest wardens and must first pass upon such cases and assume reponsibility.

While the new law gave protection to trees

HOW NOT TO DO IT

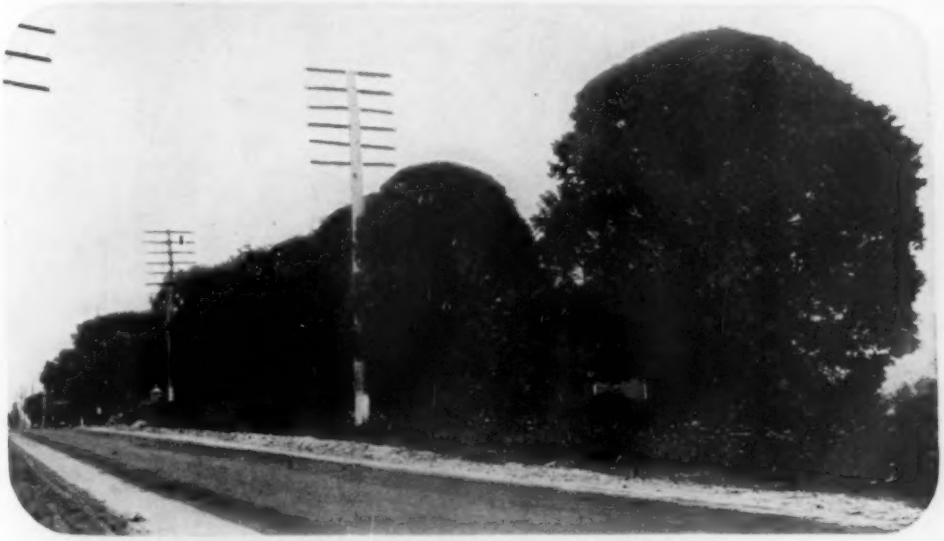
These beautiful old trees along the roadside have been unmercifully hacked, and their beauty of contour ruined, to accommodate overhead wires

within the rights of way of highways, it did not provide protection for trees and shrubbery on private property by the roadside. So in 1918 a law was passed making it a misdemeanor to remove or injure trees, shrubs, vines, flowers, moss, or turf without the written consent of the owner or under his personal direction.

ACKNOWLEDGMENT.—From an article on "How Maryland Cares for Her Roadside Trees, in *American Forests and Forest Life*.

$100,000 to Further Forestry

A GIFT of $100,000 has been made to the American Forestry Association by George D. Pratt, of New York, formerly Conservation Commissioner of New York and now President of the Association. The gift is conditional upon the raising of an additional $100,000 by the Association, toward which $60,000 is already available. The income is to be used to further the Association's work of popular education in forestry and conservation.



TRIMMING UNDER SUPERVISION IN MARYLAND

Red cedars along the Baltimore-Washington Boulevard, near Beltsville, which have been carefully and properly trimmed under state supervision to accommodate overhead wires

Clean Up, Paint Up, and Fire Prevention

An All-Year-Round Campaign in Cincinnati, Ohio

By Howard M. Wilson

Manager, Civic Affairs Department, Cincinnati Chamber of Commerce

"IF a community campaign of any kind is good for a week and brings about beneficial results, why not organize and establish it on a permanent basis?" said W. C. Culkins, Executive Vice-President of the Cincinnati Chamber of Commerce. With this thought in mind, the Clean Up—Paint Up Committee absorbed the activities of the Fire Prevention Committee and organized into a permanent Chamber of Commerce group to put over this beneficial bit of work, under the chairmanship of Captain J. J. Conway.

Community Groups

Local organizations throughout the city send representatives to the general meeting, and in this way every community group is represented by a delegate. The delegate in turn takes back the messages of the central committee and in that manner improves his own community and is responsible for the progress of work in his section.

Every community is encouraged to make similar efforts to undertake year-round clean up and fire prevention activities, which can be done at very little cost with all organizations cooperating as they have in Cincinnati. This voluntary work is being done with a spirit that has been most gratifying.

A further move is now on foot to divide the entire city into sections under the direction and leadership of precinct and ward workers.

The retail and wholesale merchants are being tied in closer together than previously because the campaign has been made a permanent one. A definite division was made of these groups in the fall of 1926.

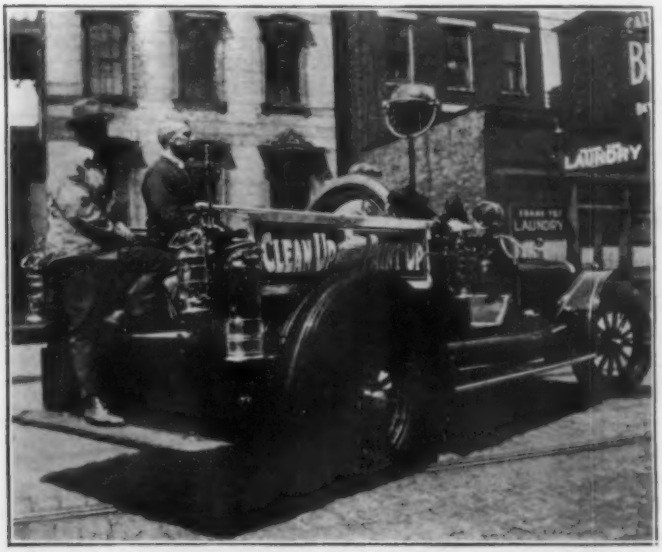
Anti-Litter Division

Without duplication, the Cincinnati Committee has organized an Anti-Litter Division of the Clean Up Committee. This was patterned after the Anti-Litter Bureau of New York and has already proved most successful in Cincinnati and will be continued permanently. This Division is handled through the general committee, with the cooperation of the Civic and Vocational League of the Public and Parochial Schools of Cincinnati. The membership of the Division is composed of junior high school and high school students of these schools. It is their responsibility to inspect and report violations of the Anti-Litter Law as well as other discrepancies in conditions within their school district. Printed material, blanks for reporting, etc., are shown in this article.

City Departments

As stated, all organizations have representation on this committee. Practically all city departments are tied in with the organization so as to have the immediate contact between our general committee and the public officials. The public officials are not only pleased with this contact, but are cooperating 100 per cent with the Committee, all of which results in greater benefits to our entire city.

The Fire Department, for example, has permitted the use of fire apparatus as a means of bringing the movement to the attention of the people. Banners bearing the clearly lettered admonition to "Clean Up—Paint Up" are stretched across the sides of the machines, and catch the eye of the pedestrians and autoists as they pause to give



FIRE DEPARTMENT GIVES PUBLICITY TO CLEAN UP AND PAINT UP ACTIVITIES

right of way to fire apparatus or turn with interest to watch it pass. This method was used during the concentrated drive at the start of the clean up activities in 1926, and it will no doubt be repeated this year.

Flushing Sidewalks

A feature that has been very beneficial during the last few years has been that of cleaning sidewalks, especially in our business and congested areas. This committee in cooperation with the Health Department solicits practically every merchant, forwarding them a letter explaining the "flushing of sidewalks" campaign and asking them to sign a pledge to flush sidewalks every morning. Any waste material that may be on the sidewalks is collected and then the sidewalks are flushed, when the temperature is above freezing. This eliminates dry sweeping and is a sanitary procedure in every respect.

Inspection of Premises

Continuous inspection of premises is made by the various branches of the Fire Department, and this has proved beneficial in many respects. The method of this inspection is to place one fireman on special duty in his district, to go from house to house and make reports on blanks provided for this purpose. His orders are backed up by authority, and if changes are not made as he orders them, the matter is followed through with some prosecution. It is interesting to note that the courts upheld a charge of nearly $700 against a concern in Cincinnati for expense to the Fire Department in handling fire hazards. This company had ignored orders to change or eliminate certain fire hazards.

The Committee also started a movement last

Flushing of Sidewalks and Gutters.

Sputum, dust and mud-covered sidewalks are not only a menace to the health of the general public, but a tax on business. Mud, carried into places of business or deposited on sidewalks, quickly becomes converted into dust, which is distributed and set in motion by every footstep and carried on every breeze. The end results are infection of the respiratory tract and damage to all varieties of merchandise.

The damage done in this city annually by dust amounts into the millions. A large percentage of this loss could be avoided by a daily flushing of sidewalks and gutters. Ten minutes at the outside would be sufficient time to accomplish this for the average place of business. Carried out generally in the business district, it would quickly result in giving this city a nation-wide reputation for cleanliness, one that would be an invaluable asset not only in attracting patronage from the outside, but in conserving that already within our corporate limits.

It is unlawful to sweep any sidewalk, when the temperature is above the freezing point, unless the sidewalk shall be sprinkled with water sufficient to avoid the raising of dust.

CINCINNATI CHAMBER OF COMMERCE
CLEAN-UP CAMPAIGN

CINCINNATI BOARD OF HEALTH,
W. H. Peters, Health Commissioner.

NOTICE SENT OUT BY THE CLEAN UP COMMITTEE IN CO-OPERATING WITH THE CINCINNATI BOARD OF HEALTH

THE CINCINNATI CHAMBER OF COMMERCE
126 East Fourth Street

Telephone: Main 6300

Block Captain's Monthly Report

Hand This Report to Your Civics Teacher on the 1st or 15th of Each Month for High, Junior High or Eighth Grade Elementary Schools, Respectively.

REPORT for Month of ..... 192....

Name .....

Address .....

School .....

Civics Teacher ..... *Civics Class, Grade* .....

For the block comprising ..... from ..... to .....

I have reported ..... violators for sweeping, throwing or burning refuse in streets, yards or lots.
I have reported ..... violators for uncovered, insufficient or improper garbage cans.
I have reported ..... violators for overfilled ash cans or untied or unpacked litter.
I have reported ..... violators for placing cans or bundles on curb line.
I have reported ..... violators for expectorating on sidewalk or in public conveyances.
I have reported ..... violators for unsanitary condition of streets, yards or lots.
I have reported ..... violators for tardy or non-removal of snow or ice from sidewalk or gutter.

WRITE IN DETAIL A REPORT OF YOUR ACTIVITIES AS BLOCK CAPTAIN DURING THE PAST MONTH.
KINDLY ADVISE WHETHER CONDITIONS PREVIOUSLY REPORTED HAVE OR HAVE NOT BEEN CORRECTED

BLANK FOR LISTING UNSANITARY CONDITIONS REPORTED BY BLOCK CAPTAINS APPOINTED FROM STUDENTS OF CIVICS IN THE CINCINNATI SCHOOLS

year to bring about the use of proper containers for waste materials on the streets. A great deal of the litter and waste found on the streets has been caused by the use of poor receptacles.

CINCINNATI'S PERMANENT CLEAN-UP CAMPAIGN

PART OF ORDINANCE No. 1329

"It shall be unlawful for any person to throw or sweep into the streets, alleys, parks, or public grounds of the city of Cincinnati, any paper, nails, fruit parings or skins, or refuse or rubbish of any kind, or to throw or place such matter upon any sidewalk or street crossing, or on any driveway, or upon the floor, stairway or hallway of any public building, theatre, railway depot or railway platform in said city." PLEASE OBEY.

CINCINNATI CIVIC AND VOCATIONAL LEAGUE

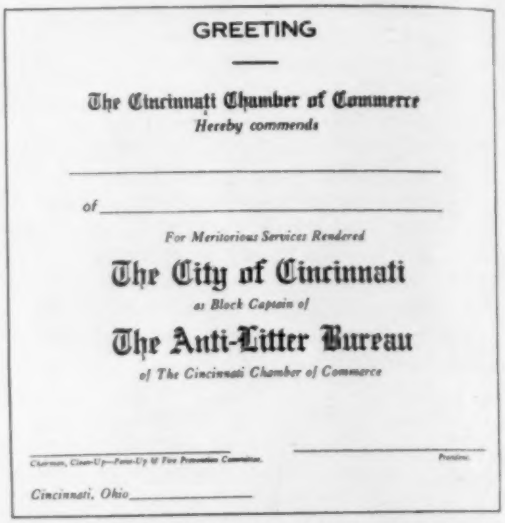
A POSTER IN SIMILAR FORM WAS PREPARED BY THE PRINT TRADE SCHOOL OF THE CINCINNATI DEPARTMENT OF VOCATIONAL EDUCATION

Wooden and pasteboard boxes, for instance, are often broken before they are collected.

As the result of this movement, an ordinance aiming at the elimination of the nuisance was passed in December, 1926. This requires that every owner of a tenement house, lodging-house or hotel shall provide sufficient suitable metal cans, with tight-fitting lids, as receptacles for ashes, rubbish, garbage, etc. Similar containers shall also be kept by householders occupying private dwellings, storekeepers, firms, or corporations having accumulations of rubbish upon their premises. The cans are to be set in convenient places for the removal of their contents by the city collectors. The ordinance also forbids anyone to throw rubbish of any kind into the streets or public places of the city, or to allow noxious, impure, or offensive liquid to flow into the streets.

"Swat the Fly"
"Remove the Mosquito"
"Exterminate the Rat"

In addition to its other activities, the Committee is backing the Health Department in a "Swat the Fly" campaign and in the oiling of stagnant pools to combat the mosquito. It is also considering very seriously a possible continual campaign against the rodent.


GREETING

The Cincinnati Chamber of Commerce
Hereby commends

_____

of _____

For Meritorious Services Rendered

The City of Cincinnati
as Block Captain of

The Anti-Litter Bureau
of The Cincinnati Chamber of Commerce

_____ _____
Chairman, Clean-Up—Paint-Up & Fire Prevention Committee. President.

Cincinnati, Ohio _____

TESTIMONIAL GIVEN TO BLOCK CAPTAINS OF THE ANTI-LITTER BUREAU

If the experiences of Cincinnati in these various activities can be helpful to any other city, the Chamber of Commerce is most willing to cooperate in any way that it possibly can. Communications can be addressed to that organization or to the writer of this article, who is Secretary of the General Clean Up—Paint Up and Fire Prevention Committee.

EDITORIAL NOTE.—See "Preventing Fires by Making Careless Tenants Pay for Them," p. 216 of THE AMERICAN CITY for February, 1927.

You Don't Have to Take Care of Your Neighbor's Cat

Under this heading, the Public Library of the District of Columbia tells in its new bulletin, "Your Library," the following incident:

> A new borrower confided in us one day that she was spending a delightful month—thanks to the library.
>
> "My neighbor," she said, "loaned me the use of her library card in exchange for taking care of her cat while she was out of town."

The District of Columbia Library publishes this anecdote to call public attention to the fact that any one may have a library card if he lives or works in the District.

The American City is reprinting the item with the thought that similar public ignorance of the availability of free library service may exist in other cities—an ignorance which librarians and civic organizations might do well to dispel.

Why Bituminous Macadam Pavements Succeed or Fail

By George H. Henderson

Chief Engineer, Rhode Island State Board of Public Roads

THROUGHOUT New England, soil conditions vary within very limited areas. It is not uncommon to run out of gravel into clay or other poor subsoils and back into gravel within a few hundred feet along the line of construction. Were the subsoil of uniform texture, whether good or poor, the construction of the road in so far as foundations are concerned, would be simple.

In New England, frost depth varies from 2 to 5 feet. It is conceded by engineers that where frost action abounds extra care must be observed in providing proper drainage and foundation under road pavement. It is Rhode Island practice to replace poor subsoil with a uniform layer of gravel or stone foundation. The depth varies with the degree of tightness of the soil. The only rule that we have for determining the proper depth for foundations is the "rule of experience." We have seldom found a case of bad subsoil that a uniform layer of 12 inches of coarse, permeable gravel would not take care of, provided it was tapped out through the shoulders and properly drained.

Through ledge sections where water seepage may be expected, a stone fill of 9 to 12 inches is employed, with subdrains at least on one side of the road and frequent taps from the stone fill into the stone- or gravel-filled subdrain trench. Through particularly bad, mucky soil, a blanket course of sand or fine gravel has sometimes been laid, usually 4 to 6 inches in depth, over which is constructed a standard stone fill or stone foundation. The object of the binding course is to hold the muck down and prevent its rising and filling the interstices of the foundation above.

It is believed that the almost total absence of heaving and breaking-up of macadam in Rhode Island is due to this treatment.

Integrity and Riding Quality of Pavement

Of prime importance in the integrity and riding quality of a pavement is the preparation of the subbase upon which the base course of crushed gravel is to be placed. Whether the subgrade is of natural soil or has been prepared by using gravel, coarse stone or any other granular material, it should be be thoroughly compacted and made hard over the entire width of the pavement and preferably for at least 12 inches outside the pavement. Any soft spots that are allowed to remain in the subbase will finally injure the riding qualities of the pavement.

Not all soft spots are caused by pockets, of poor material constituting the subgrade. Often the material in the soft pockets, while not bad itself, is of such a different nature or grading from the surrounding material constituting the subbase that it is soft in comparison. Contractors who have been asked to eliminate soft spots in a gravel foundation sometimes question the wisdom of making a substitution, their argument being that the material is granular and that it came out of the same gravel-pit as the rest of the subgrade. They assert that the unevenness can be ironed out in the base course of stone. If it is allowed to remain and is not thoroughly ironed out in the base course of crushed stone, it is taken out in the top course of stone. Our experience has shown us that where these soft spots are allowed to remain in the subbase, even though any unevenness is taken out in either course of stone, it is only a question of time before a depression in the finished pavement will appear at the spot. The little inherent strength in the constructed macadam may bridge the spot for a while, even

The User's Viewpoint Has Changed

The success or failure of bituminous macadam roads depends on the degree of care given the various details of construction. Only a few years ago the construction of any hard-surfaced pavement in place of a poor country road was considered by the public using the road as successful so long as the integrity of the pavement remained. Very little was heard concerning poor alignment and grades or poor riding qualities of the pavement. Today the motoring public is more discerning and is beginning to take note of the riding quality of the pavement, the alignment and grades. A few years ago construction meant the building of good, stable roads, while today good construction means the building of a good, stable road in good alignment and grade and with almost perfect riding qualities.

a year or two, but eventually it will let down.

Another essential in good construction is the placing of sufficient shoulder along the side to hold the crushed stone courses. If care is not given to this detail, the shoulder material may be insufficient to sustain the crushed stone at the proper grade during the process of rolling. Where an insufficient amount of shoulder material is placed, during the rolling process, the crushed stone pushes out to a greater or less extent, with the result that the outside edges of the finished pavement are uneven in contour and inclined to be scalloped. We have seen cases where the detrimental effect has extended into the pavement for two or more feet, noticeably injuring the riding quality of the pavement along its outside edges. In the event of future widening of the pavement, it is necessary to cut back a considerable distance into the metal in order to obtain a standard cross-section. In some cases where the widening of the pavement was not involved, traffic so avoided the outer two feet of the pavement because of its uneven riding quality that it was found necessary to rebuild the outer edge in the interests of safety to the traveling public, even though there was not a single break in the pavement.

Construction of Pavement Surface

The construction of the pavement proper calls for considerable care in the details. If the work is being done by a qualified contractor having an organization well versed in bituminous macadam construction, the battle is ninety per cent won. If an inferior contractor is doing the work, even under rigid inspection, sometimes it is difficult to secure a satisfactory job. We have seen bituminous macadam constructed successfully where the mineral aggregate used was not of the best quality and during periods when construction conditions were not particularly favorable, and we have seen bituminous macadams poorly constructed when the best of materials were used and under most favorable conditions. The word "successful" is intended to cover both the lasting integrity of the pavement and its riding qualities.

Aggregate

In Rhode Island we have four classes of aggregate employed in the construction of bituminous macadam—crushed local wall or field stone, crushed local ledge rock, crushed local gravel, and trap-rock which is imported from Connecticut. The French coefficient of wear and toughness for our local stone varies within wide limits. Most of this stone we believe too soft for use in the wearing course of a bituminous macadam. Occasionally we find local ledges of exceptionally good quality. Where suitable local stone is available and the length of the work involved justifies the setting-up of a crushing plant, we employ local stone in the base course with success. In the wearing course or penetration course, except in isolated cases, we employ trap-rock.

With our local stone as crushed on the job, we have difficulty in securing uniformity in size and quality. The lack of uniformity in crushed sizes of local stone we believe has little detrimental effect in the construction of the base course, but the same lack of uniformity in sizes, we believe, has a very definite effect if used in the penetration course. The breaking-down of the softer local stone under the roller plugs up the voids, which results in uneven distribution of the binder, causes fat spots, and is in general detrimental to the pavement. We use the harder stone in the penetration course because of its superior wearing qualities and especially because of its uniformity of size. When laid, this stone presents a more uniform distribution of voids for the penetration.

Where local stone is used in the base course, most of the run of the crusher up to sizes passing a 3-inch ring is utilized. Where local stone is permitted in the top course, the size is limited to stone passing a 3-inch ring and retained on a 1½-inch ring. In trap-rock we use in the penetration course stone passing a 2½-inch ring and retained on a 1½-inch ring; for the filler or keystone sizes, passing a 1-inch ring and retained on a ⅝-inch ring; and for the cover, clean ⅝- to ⅜-inch screenings. We have used a slightly smaller size in the larger stone with uniformly good results. The size of the stone specified can be varied somewhat, but it should run uniform in size and show an even distribution of voids when spread, which will permit an even penetration of the binder to the full depth of the wearing surface. Our standard bituminous macadam calls for a 5½-inch base course and a 2½-inch wearing course. For binder we have used almost exclusively an oil asphalt of 85 to 100 penetration.

With the foregoing materials it is possible to construct a first-class bituminous macadam and all the varying degrees down to a poor bituminous macadam, depending for the most part on the care used in the details of construction. As in the case of a uniformly rigid subbase, we believe it essential that the first course of stone after completion should be uniformly hard and true to contour. The penetration course of stone should be uniform in depth to insure the best results. Men experienced in raking stone can secure this uniformity in depth and contour regardless of whether or not mechanical stone spreaders are used. If the

stone spreaders are not experts, constant attention to this work must be given by the engineer in charge, or the riding qualities of the finished pavement may be poor.

It is our practice to fill the base course of crushed stone with sand or crusher dust during the rolling process. After the stone is first rolled, the sand is applied in light coats as the stone is rolled, more being added until the bottom course no longer creeps or depresses appreciably under the roller. If heavy trucks are to be used on the base course for a considerable period before the top course goes on, a 1-inch layer of sand or dust is sometimes spread over the bottom course to protect it. Before the top course of stone is spread, this excess sand or dust is swept off the bottom course to expose the stone and to permit a bond between the top stone and the bottom course.

Except in cases where extremely wide shoulders are available for traffic, we believe it absolutely essential that before spreading the top stone the ¾- and ½-inch stone used as keystone and covers, respectively, be stacked in small piles along the shoulder of the road. It is poor practice to allow trucking through the top course of stone.

Do Not Slight Details

In the construction of a reinforced cement concrete pavement, which has certain inherent strength, we are not prone to slight the details of construction; the question arises: Should we slight the details of construction in a bituminous macadam, which has little or no inherent strength? Doubtless, if the same care were exercised in the use of materials and the construction operations of a bituminous macadam, that is used in the construction of a concrete pavement, much better pavements would result and there would be fewer failures.

A successful bituminous macadam generally results where the essential details of construction are adhered to, while the slighting of these essentials of construction often spells failure. Probably the worst disease prevalent in road construction is that known as expediency, and few, if any, of us are immune from it. Expediency often calls for the use of materials not in accordance with specifications and sometimes calls for the slighting of essential details of construction.

Applying the Asphaltic Binder

In the application of the asphaltic binder considerable finesse is involved. Fortunately, in Rhode Island, the asphalt for practically all our jobs can be hauled over the road in pressure distributors from central heating plants belonging to the oil companies. Three-quarters of the area of the state is within 25 miles of these plants. Ordinarily we plan to get 1¾ gallons cold on the first application and ¾-gallon cold on the seal coat. Needless to say, it is essential that there should be an even distribution of the asphalt and also that the asphalt should penetrate the full depth of the stone. This can be obtained only by having the stone clean, by having evenly distributed open voids in the stone, by having the asphalt hot enough, and the pressure distributors in perfect condition mechanically. If the asphalt is underheated, it does not get into the stone as it should.

In Rhode Island three types of pressure distributors are in general use. On one type, pressure on the bars and nozzles is applied by steam generated by a separate boiler attached to the rear of the truck. With this equipment, occasionally the pressure goes down before the full tank load is distributed. On another distributor an auxiliary clutch from the motor is used in obtaining pressure, and the pressure obtained is in ratio to the speed of the truck. It is difficult to get high pressure and low speed at the same time. The third outfit has a separate power unit for generating air pressure. This unit has no connection whatever with the motor on the truck. With this outfit, uniform pressure can be obtained regardless of the speed of the truck.

The temperature of the binder can be regulated by thermometer testing better than by guesswork. Our specification calls for the binder to be heated to a temperature between 275 and 350 degrees Fahrenheit. We believe as near 350 degrees as possible is the best practice, especially in cold weather.

The nozzles of the pressure distributor should be tested to see that they are clear before the distributor is used.

Before the first penetration, all foreign matter, such as leaves, twigs, sticks, etc., which may have blown onto the top stone should be removed.

The engineer in charge, knowing the volume of binder in the distributor and the width of spread, should figure the distance that should be covered in the distribution and place a stake at this point as an aid to the driver of the truck. No one but an experienced driver should be allowed on the distributor, and he should average within 10 feet of the mark on each distribution.

Where possible, it is preferable to penetrate the left-hand side of the road first, as the driver generally sits on the left-hand side of the car

and is better able to secure an even line of distribution. On our standard 18-foot road, it is our practice to spread 10 feet on the first half of the road and 8 feet on the second half. This system permits the spreading of the keystone and the rolling on the entire half of the road. The penetration must be carried a considerable distance before the seal coat is applied, owing, of course, to the fact that less asphalt is used in the seal coat and a distributor load covers a greater distance. Where the first penetration was for a 10-foot strip on the left-hand side of the road, a 10-foot strip on the seal coat is applied on the right-hand side of the road. In this manner of application, the seal coat application and the penetration application are staggered.

Streaks in the penetration course of stone should be penetrated with a hand hose and not left for the seal coat to cover up. Where the streaks are not taken care of and are covered by the seal coat, raveling often takes place after the seal coat has been applied.

When the asphalt is hot enough and there are skips, it is evident that the nozzles are plugged. Under this condition there is generally present a bluish smoke. If the bluish smoke is not present, and there is streaking, it generally means that the asphalt is not hot enough, and the distributor should be stopped and the asphalt brought to the proper temperature.

Too heavy an application of binder is to be avoided, as it may cause the development of corrugations after the pavement has been opened to traffic.

After the first application, only enough keystone should be spread to permit rolling. A strip 8 to 12 inches wide should be left unfilled until the second half of the road is penetrated. This avoids the spreading of excess keystone along the dividing lines of penetration and prevents a ridge from developing along the center. After the initial rolling, enough keystone is added to fill the voids in the top course of stone, and the road is then rolled to its final cross-section. Hand push brooms or mechanical brooms or brushes of various types are used to spread the keystone evenly over the penetration course. All excess stone above that needed to fill the voids is cleaned off before the seal coat is applied. The keystone is not a separate course of stone, but only a filler, and after it is applied, the surface of the pavement should be mosaic in appearance. After the seal-coat application, the peastone is spread in sufficient quantity to completely cover the seal coat.

Necessity of Adequate, Skilful Rolling

In addition to receiving the skilful rolling required in the construction of a good bituminous macadam, it is essential that the pavement should secure sufficient rolling to thoroughly compact the stone. We do not believe it possible to over-roll a bituminous macadam after the binder has been applied. It is our practice to require the rolling of the top course of stone to a firm set before the first application of the binder and to require the back-rolling for several days after the pavement is completed. This practice demands more durable stone. In cold weather back-rolling is confined to the warmer part of the day, usually between ten o'clock in the morning and two o'clock in the afternoon.

It is our practice to open the road to traffic as soon as the seal coat has been covered. Occasionally, when expediency demands it, we have opened the road to travel after the first penetration has been thoroughly rolled. We have experienced no bad results from this practice.

Costs and Service

The average cost of our bituminous macadams proper, exclusive of drainage, foundations, engineering, etc., has been $17,750 per mile for an average width of 18 feet. The total average cost, including grading, foundations, etc., is approximately $32,000 per mile. Our average maintenance cost of bituminous macadam constructed since 1913 has been approximately $150 per mile per year.

Building a Bituminous Pavement Summarized

To insure a successful bituminous macadam, begin at the bottom and provide proper foundations and drainage; construct a firm subbase; if there are weak spots in the subbase, remedy them before spreading the first course of stone; if there are uneven spots after the first course of stone is rolled, remedy the trouble before spreading the top course of stone; if spots in the top stone are tight, because of an accumulation of small stone or the breaking-down of stone that should not be in the top course, remove them before the first penetration; if, after the first penetration, there are streaks, take care of them before allowing the seal coat to be applied. In other words, constant care should be taken during the whole construction process and faults corrected as they occur.

ACKNOWLEDGMENT.—From a paper read before the Fifth Annual Asphalt Paving Conference, Washington, D. C.

Two Thousand Counties Need Parks

By Henry S. Curtis, Ph. D.

Director of Hygiene and Physical Education for the State of Missouri

THE park is an attempt to bring the country into the city and retain it as a sort of city dooryard. But in these days when we have autos enough to carry most of our people, and bus and street-car systems radiating out in every direction from city centers, it becomes increasingly important that such open spaces as our cities can provide within their own limits shall be supplemented with scenic parks in the nearby country.

The ordinary park has become inadequate for the motor age. It was made for people in carriages. For them a park of a thousand acres represented a drive of an hour or more and a real outing in the open air. Today a park of a thousand acres is traversed in a few minutes. People like to get out into the country for their outings, where the scenery is more natural and the highways are less crowded. Connected with a series of parkways, a system of country parks offers the ideal outing for the autoist.

Our first country parks, I believe, were the metropolitan park system of Boston, which was established more than thirty years ago. It has several large tracts, of which the Blue Hills reservation alone contains more than 14,000 acres. The next system to be established was the Essex County park system of New Jersey, which includes Newark and the Oranges. During the last few years there has been a splendid development in Westchester County, which lies just above and about the city of New York. Many millions have been expended on this system of parks, boulevards, and playgrounds. Within the past year appropriations have been made for a park system lying about the city of Buffalo in Erie County and another about the city of Rochester. This is so obviously the thing to do that it is safe to predict that most metropolitan areas will soon be so organized.

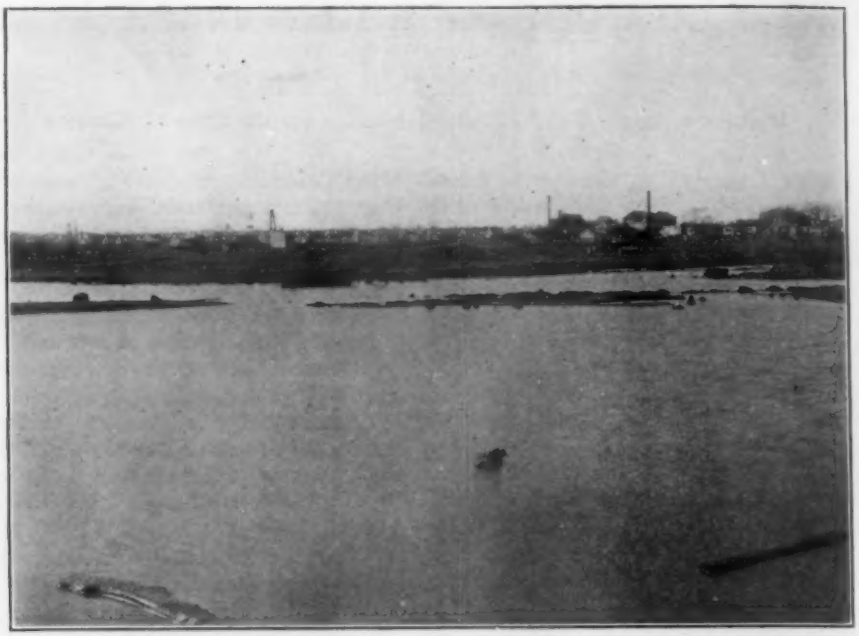
The first rural parks, located in counties remote from great centers of population, were those of California. Eight such county parks are now in operation. Laws have recently been passed providing for county parks in Kansas and Texas also, though very few have thus far been acquired. It is this type of park which I regard as the most hopeful prospect in the whole field.

In many cases also a development is going on on a commercial basis. In Missouri there are many swimming pools, sometimes with facilities for baseball and basketball adjacent, which are located in the open country, often ten or twenty miles from any good-sized city. These facilities are very fully used on Saturday afternoons and Sundays and in the late afternoon every day. Inasmuch as a fee is charged, they are a sure demonstration that the time for such a development is ripe.

There are 3,200 counties in the United States. But many of those in the West are situated in or near the national parks or forests. Many are served by some one of the 500 state parks which are located in 43 different states. Many are so remote from good roads or any considerable population that a park development there for the present is not practical. There are left about 2,000 counties in which a county park is needed.

Specifications for an Ideal County Park

The average county contains a little more than 1,050 square miles and is about the size of the state of Rhode Island. The park that is to minister to this area should be of large size, representing not less than one-tenth of one per cent of the area, or one square mile, while one per cent, or 6,400 acres, would not be an extreme amount. This territory should consist of mountains, ravines, wooded hillsides, and the banks of lakes and streams. For the most part it would not be valuable for agricultural purposes and could be purchased for less than the current price of farm land. The Taconic State Park in New York, which contains nearly 3,000 acres, lying just west of the Berkshires, cost $8 an acre. The mountain park of many thousand acres lying at the lower end of Lake George cost $11 an acre. There are many sections of the United States where large areas of great potential recreative value and of almost no other value could be secured at a yet lower rate. Probably a county park of a thousand acres or more could be had for nearly every county of the United States for $50,000. In many cases this amount would purchase thousands of acres. This park should lie along or be connected with a good road or roads. It must have paths, bath-houses and facilities for baseball, basket-ball and tennis. Its development would undoubtedly cost another $50,000 or $100,000 for the park in a developed state. At $100,000 each, 2,000 parks would cost $200,000,000. Spread over



A SCENE IN ONE OF THE ESSEX COUNTY (N. J.) PARKS THIRTY YEARS AGO

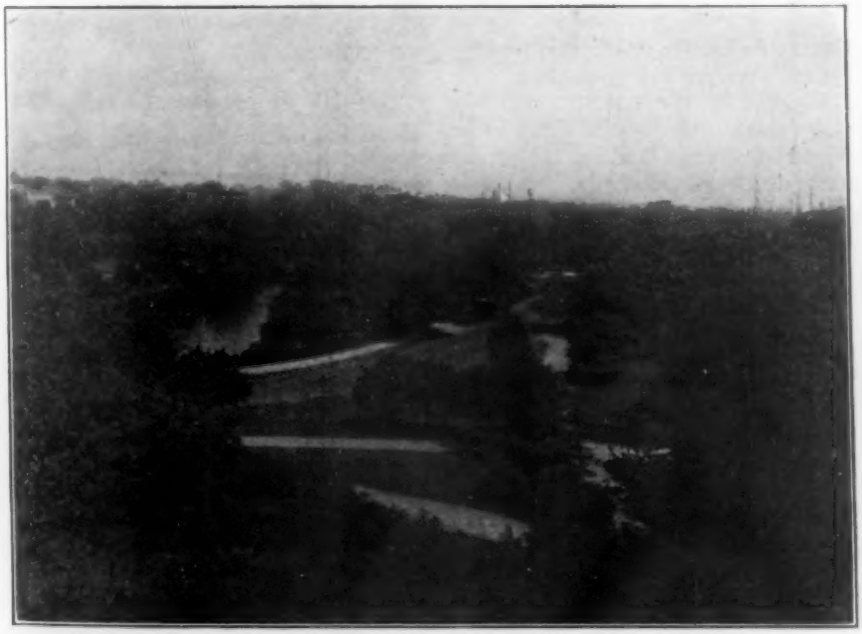
the United States, this would mean a little less than $2 per capita.

Such a park would serve several very important ends. It would place a large-sized recreation ground in the center of every rural community. As such it would add greatly to the attractiveness of the country to the younger people, and would tend to lessen the abnormal

THE SAME SECTION OF THE PARK, SHOWING PRESENT DEVELOPMENT

A VIEW IN BRANCH BROOK PARK IN 1900

migration of country-minded people to the cities. It would be the normal place for country and city to meet together and should promote a better mutual understanding. It would furnish a camp site in every county for farm clubs, for the Boy Scouts, Girl Scouts and Camp Fire Girls, and for playground systems. It would relieve the congestion of city parks and



Illustrations by courtesy of the Park Commission, Essex County, N. J.

THE SAME SCENE, SHOWING THE SUBSEQUENT STURDY GROWTH OF FOLIAGE AND TREES

allow these to be turned over to a greater and greater degree for children's playgrounds and athletic fields.

Under this plan every rural area would reserve a large section of land where certain wilderness features might be retained. It would be a game preserve, where all native birds and animals would multiply and become tame enough to be observed, and from which they would constantly migrate to restock the country round. It would be a haven where all native trees, shrubs, and flowers would be protected and their survival assured. It would be a county forest of vast potential value, which would increase with each year of growth. This would give us the only possible assurance that a considerable area of real forest would be kept in every section of the country, and that thus the birds and animals that can live only in a good-sized forest would be preserved. It would be a partial answer to the present use of forest timber, which is now about six times what we are growing each year. Under a competent state forester, these county forests would in time represent a large potential income, at least sufficient to maintain the park. In Europe there are many cities that are partially or wholly supported by their municipal forests. According to the policy of the State Park Bureau of New York, all such parks should be self-supporting through the sale of supplies to visitors, campers, and others and from the sale of timber and wood.

How County Parks Are Being Financed

In California these county parks have been purchased directly by the counties and are maintained by them. This would seem to be the logical method of procedure, but the county is very poorly developed politically. Its funds are in general inadequate, and its form of organization does not lend itself to the undertaking of large enterprises.

The work was carried on in the early years in New York State through a State Council of Parks, which has finally been merged as a bureau in the State Conservation Commission. Under this bureau are also the forests, fish hatcheries, fish and game protection, and water-power sites.

In Michigan a number of state forests have been secured, largely through land reverting to the state from the non-payment of taxes. These are mostly cut-over timber-lands lying in the northern part of the state, but a consistent policy of trading portions of these lands for others located in different parts has been followed with a view to covering the state with a real system. Fifty-four state parks have been constituted.

An Opportunity for Men of Means

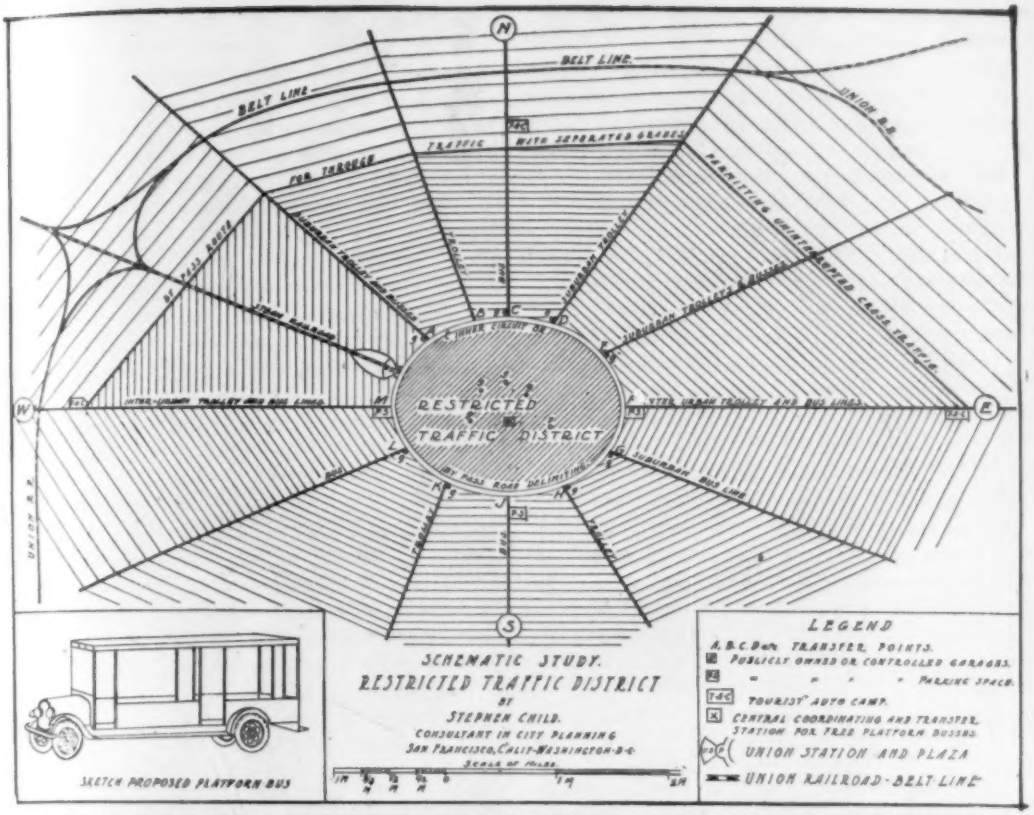
A considerable proportion of the 500 state parks have been given by wealthy men. Of these, some have been named after the donors and some have not. One hundred thousand dollars is not a large bequest as bequests go. A building given to a university or college may blow down, burn down, or be shaken down by an earthquake, but whether it does or not, it will become obsolete within fifty years, because of our changing ideals of education. A forest also may blow down or burn up, but land cannot be destroyed, and it seems certain that at no future time will our appreciation of the beautiful in nature be less. If a man wished to make a bequest to the county of his birth or of his business success, that would keep his memory green through all the ages to come, where could he find a more attractive opportunity than in the contribution of one of these parks? Henry Ford might give one to every county in the United States, as Carnegie has libraries, and hardly miss the funds.

It seems certain that such a system of parks would in the long run be a good investment, for a county or an individual. In Europe it has been found that lands adjacent to parks and boulevards increase so much in value that where a small amount of extra land is purchased, this may often be re-sold for enough to pay for the whole. The entire cost of the great park and boulevard system of Kansas City has been assessed upon the adjacent property. Subsequent sales show that this property has increased in value much more than the cost of the improvements.

Around the entrance of each of the state parks of New York are growing up hotels, restaurants, gas stations, etc. These sites are worth nearly as much as city land. If one square mile were purchased at $50 per acre in a county containing 1,000 square miles, and it increased the value of the land of the county 5 cents an acre, this would pay for the park.

Much of this land in the West would be in the mountains, and sooner or later beneath many of these reservations valuable minerals would be found. In certain parts there would be oil. Probably the aggregate returns from these two sources alone would yield the entire $100,000,000.

America cannot have the palaces, castles, and historic fields of Europe. She must find her charm largely in natural beauty. Suppose we place in every county a large-sized park where the characteristic fauna and flora of the locality will be protected, and connect this vast system of parks by a series of parkways and roads. Is there anything that could add more to the attractiveness of America?



NOT AN ARENA FOR A PRIZEFIGHT, BUT A SCHEME FOR PREVENTING EXTREME TRAFFIC CONGESTION

Restricted Traffic District Proposed

A Suggestion for Solving the Problem of Extreme Traffic Congestion in the Central Portions of Cities, by an Extension of the Zoning Principle

By Stephen Child

Consultant in City Planning, San Francisco

IT is to be stated at the outset that the scheme herewith suggested is quite evidently not applicable to such enormous congeries of people as occur on Manhattan Island, with its unique topographical and other conditions; probably not to such enormous cities as London or Paris, Chicago or Philadelphia. City planners in these and similar communities please take notice. It is believed, however, that the scheme could be adapted to many cities ranging in size from 100,000 to 500,000 population.

It should be understood also that the details of such a scheme would have to be worked out to suit existing local conditions of topography, street plan, transportation facilities, existing trolley and bus lines, distribution of population, and many other factors.

Briefly, the scheme is as follows: After a careful study of all existing conditions, the outline of a Restricted Traffic District would be determined—the most congested portion of the heart of the city—not in any case a very large district; never an area so large but that reasonably healthy, able-bodied men and women could walk entirely across it, or at least from its edge to its center, without undue fatigue; say, for example, an area with a radius of from three-quarters of a mile to a mile—a maximum diameter of two miles. The district would vary in outline and never, of course, be a true circle.

Upon the streets of this Restricted Traffic District neither trolley lines nor bus lines would be permitted, except the special municipally owned platform busses, discussed later. This does not mean that existing trolley tracks would necessarily have to be removed at the beginning, although undoubtedly the poles and overhead wires should be, and the tracks would

disappear later whenever paving was renewed.

Upon the streets of this carefully delimited district, four classes of vehicles would be permitted, all of them limited as to speed to a maximum of ten miles an hour: (1) Slow-moving motor delivery trucks of all sorts. There would be opportunity, and in many instances it would be desirable, to restrict the hours during which certain classes of these—the heavy freight trucks for instance—would be permitted to enter the district. (2) Taxicabs. (3) Privately owned automobiles; these to be completely prohibited during certain hours as recommended in the statement of traffic principles recently prepared under the auspices of THE AMERICAN CITY.* (4) A large number of free platform busses.

All of these vehicles, delivery trucks, taxicabs, privately owned automobiles, and free platform busses, would be permitted to stop within the district only long enough to unload and load—*never under any circumstances to park*. No horse-drawn vehicles would be permitted in this district. Fire department apparatus and ambulances must of course be permitted, but it is believed the scheme would so materially reduce accidents that there would be need for but few of the latter. The scheme would not be materially affected by subway systems, existing or proposed. There should be no steam railroad stations within the district.

The free platform passenger busses would be of a very special type of construction; and they would be owned and operated by the municipality, transportation upon them to be entirely free. Money for the operation and maintenance of this free transportation would be secured by taxation, as in the case of street lights.

These special busses would be, as their name suggests, merely platforms, 20 to 22 feet long, and 7½ to 8 feet wide, mounted on large pneumatic-tired wheels with proper arrangements for the motor and driver, the platform to be furnished with a strong railing all about it at the edge, perhaps 4 feet in height. There would be five entrances or openings, each with not more than one step—one entrance on either side at the front, near the driver, one on either side midway the length of the platform, and one at the rear. As riding is to be free, there would be no difficulty about collecting fares. Supports would extend up from the sides of each of these openings or entrances high enough and strong enough to support a simple flat roof to which would be attached many straphangers, for there are to be, you will remember, no seats. Everybody must stand for the comparatively short distance of the ride in these free busses—at the maximum not over a mile. There would be roll curtains, with celluloid windows as in automobile curtains, these to be rolled up most of the time, but dropped and fastened down in bad weather. There would also be bundle-racks similar to those in our suburban trains, all about the bus at a convenient distance below the roof.

It goes without saying that the routes of these busses must be carefully studied for each community. There would need to be frequent stops, and these at the curb, eliminating the many accidents that occur between trolley track and sidewalk. There would be a central co-ordinating transfer station.*

Existing trolley and bus lines would all be re-routed so as to go around this Restricted Traffic District. (See Schematic Study.) Fares should be arranged on the zone basis. As to this point, F. L. Olmsted, the noted landscape architect and city planner, in his recent paper in *City Planning* for January, 1926, has this to say:

"It is highly desirable, so far as it is practicable, to work away from the idea of a uniform rapid transit fare at less than cost in the direction of a system of zone fares approximating in rates what would meet the actual cost of providing the service and delimited as to zone lines with thoughtful regard to the effect of the economic burden which the fares impose toward checking rather than subsidizing socially unfruitful transportation."

This is the usual arrangement in most foreign cities.

Now let us suppose such a scheme has been carefully planned and developed and is in operation; how will it work? In the first place, at points A, B, C, D, etc. (see Schematic Study), where important streets enter this Restricted Traffic District, there would be traffic officers to enforce the new rules. All passenger vehicles, from the flivver to the millionaire's limousine and all sorts in between, would be given to understand by means of widely distributed regulations that within the district they are not permitted to travel over ten miles an hour, *nor to park at all*—merely to

*"To Park or Not to Park," issue of October, 1926, page 461.

*AUTHOR'S NOTE.—This idea of platform busses is not entirely new. Some years ago, the writer recalls, Charles W. Eliot, at that time President of Harvard University, suggested the use, not of busses, but of platform trolley cars, with no seats; his idea being that, in the case of such densely crowded localities as the Revere Beach Reservation of Boston's Metropolitan Park System, where on warm Sundays or holidays several hundred thousand people gather and great numbers of these want to return home about the same hour, his platform cars were to be assembled near by and as many as possible allowed to crowd on them and ride to a suitably located transfer point where they could leave the cars for their most convenient trolley line. It is to be noted that what is here proposed is but an adaptation of this suggestion of President Eliot.

stop long enough to unload and load, and that during certain hours the privately owned car would be prohibited.

For the taxi and the well-to-do with their chauffeurs, this no-parking would be no great hardship. For the flivver family and all others who have no one to take the car back home, parking or garage space must be provided, at or near each important entrance to our restricted district. Such storage facilities, if privately owned, must be operated under public supervision, and with nominal minimum fees, determined so as to preclude anything more than a fair return on the investment.

As to the garage idea, it may be interesting to quote from the eminent New York authority on the legal aspects of city planning, the Honorable Edward M. Bassett, as published also in the *City Planning Quarterly* for January 1, 1926, as follows:

"A new kind of garage is appearing in cities whose downtown streets are greatly congested. It is the daytime garage that stores all cars above the ground floor. Ramps or elevators are used. Some are operated by department stores for customers. The garage of this type is *for clean storage* only. No repairs of cars should be carried on and no power machinery should be allowed."

Something of this character is what the writer has in mind.

The private car owner who has no chauffeur or member of his family available to drive on with the car after he or other members of his family have left it, must do one of three things: First, walk to his office, or, in the case of the family, to the shops and theaters. These, you will remember, will not be more than half to three-fourths of a mile away, and in pleasant weather the walk will do the family all good; in fact, the scheme is bound to develop this one of the most healthful of all forms of exercise. Second. they could take a taxi, or third, the free platform passenger busses, and there must be a plentiful supply of all these at hand. Most of the other people coming in trolleys or busses will, of course, take the free platform busses or else walk. For the return trip home, the above procedure must be reversed.

All very well for pleasant weather, you say, but what about the stormy days and nights, and particularly the patrons of theaters, opera houses and public halls, and so on? As to these, the writer's observation is that even in bad weather a very large majority walk to and from subway stations or the nearest car stop—in our case the nearest free platform bus stop. For the minority, but, in the aggregate in large cities, the considerable number of people who would demand either taxicabs or their own cars, there would have to be established in the vicinity of the theaters and public halls (ideally a part of these) waiting places for a considerable number of such conveyances.

As above noted by Mr. Bassett, the department stores are doing something of this sort now, and for our "District" it would be a part of our problem to work out some sort of cooperation in regard to these matters between the owners of the theaters, lecture halls, opera houses and department stores and particularly the taxicab companies; the traffic department of the municipality to exercise some sort of administrative control. The department stores have in many cases, as Mr. Bassett reminds us, set up "daytime" storage garages for their customers. These are, of course, used relatively little at night. It would seem advantageous for their owners to cooperate with owners of theaters and halls for night use.

The Outstanding Advantage

Among the many advantages of the scheme perhaps the most important is that the enormously difficult and constantly increasing parking problem within the congested district of the city is solved at a stroke. As the little boy said when asked for the core of the apple, "They ain't goin' to be no core!" No, nor no parking in the heart of the town. Just think for a moment what that would mean in our crowded streets. Look down the side streets of our cities and see the almost continuous rows of parked cars, each presumably locked and therefore a serious obstacle to the fire department. How can traffic policemen or firemen move a locked car any more readily than can a motor thief?

It is said that shopkeepers will not stand for any such radical restrictions. As to this, Mr. Bassett, in the same article from which quotation has already been made, has this to say:

"The city can undoubtedly prohibit parking in the public streets entirely. The degree to which private owners will furnish private parking space depends upon their willingness and the pressure of economic conditions. No law can directly compel them to furnish such private space. . . . *The solution of the problem of parking in the crowded downtown public streets is for the city to stop parking . . . The city streets are after all for traffic, and parking is not traffic."*

The writer believes this is sound judgment. The proposed scheme which we are now suggesting would, it is believed, offer a fundamental solution.

Objections

Of course there will be objections—these are inherent in any new proposal, especially

one as radical as this, but let us consider some of these and if possible eliminate them.

Surely, the storekeeper, or moving-picture house manager, can have no legitimate "kick coming." No one will be prevented from freely going to the heart of the city, to his very doorstep. In point of fact, many of our large department stores are doing something of this sort to-day—urging their patrons to park their cars out in the "no-time-limit parking area" and providing free busses direct from these points to their stores, or in some cases, as has been noted, providing free daytime storage of cars for their patrons.

What about the existing trolley and bus lines? How much of their traffic would originate within this proposed Restricted Traffic District? This item would vary in each city, but the district should be so delimited as to include but a very few, if any, apartment houses or private dwellings. The residents of such of these as are included, also of hotels and boarding-houses, would have the free platform passenger busses to take them to the railroad trains, trolleys or suburban busses on the edge of the district, or, if they wish and can afford it, the taxicab.

Surely, the taxicab owners cannot be among the objectors, but rather enthusiastic promoters of such a scheme.

Many people will not like to be obliged to take the by-pass roads around the city. There are plenty of objectors to the frequent detours one meets while touring in the country; but for one reason or another they are frequently necessary. Many also will not like to transfer from trolley to free platform busses. But nowadays, however, it is a matter of life or death to many in the heart of the city who are today in very truth "either the quick or the dead."

Objection has been made to the writer that it would be difficult to determine the outlines of such a Restricted Traffic District, or to modify or adjust these lines if it should seem desirable, with the growth of the community, to do so. To which the answer would seem to be: "No more difficult than in the case of certain types of zones that have been prepared, enforced, and adjusted under our zoning laws."

In Conclusion

Why is such a scheme as is here suggested not only practicable but reasonable? It is, in fact, but another extension of the zoning principle. City planners and zoning experts have been saying to our citizens for some years now, "Here you may not build factories," or again, "Here you may not build apartment houses." And the courts have sustained their regulations of this sort—their zoning laws as we have come to speak of them—*if these are reasonable and treat all in the same district alike. Reasonableness and fairness are the fundamental requirements.*

In view of the constantly increasing delays and accidents due to congested conditions, particularly in the central portions of our cities, together with the enormous losses which these conditions entail, is it not time to be thinking about zoning or sorting our traffic? The writer believes there is here suggested a reasonable and fair method of doing this, and that a carefully worked out scheme of the character suggested would not only save much money and much time but many lives. He hopes it will provoke discussion and that the Editors will permit the publication of replies.

More Cities Require Tuberculin Testing for Safe Milk

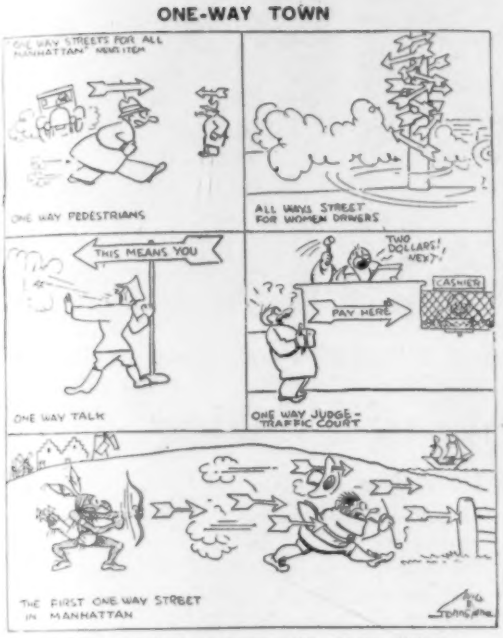
EXTENSIVE interest of cities in the nation-wide campaign against tuberculosis of live stock is seen in results of a survey recently conducted by the United States Department of Agriculture. A total of 874 cities and towns have ordinances requiring the tuberculin testing of cattle furnishing milk for consumption. In addition to these 375 provide an option between tuberculin testing and pasteurization. Thus a total of 1,249 municipalities have taken positive steps to safeguard their milk supplies from possibility of disease transmission.

As a basis for skilled tuberculin testing in which the public may have confidence, the Federal and state veterinary officials have prepared lists of "accredited" and "approved" veterinarians. These terms apply to private practitioners who have satisfied Federal and state authorities as to their qualifications.

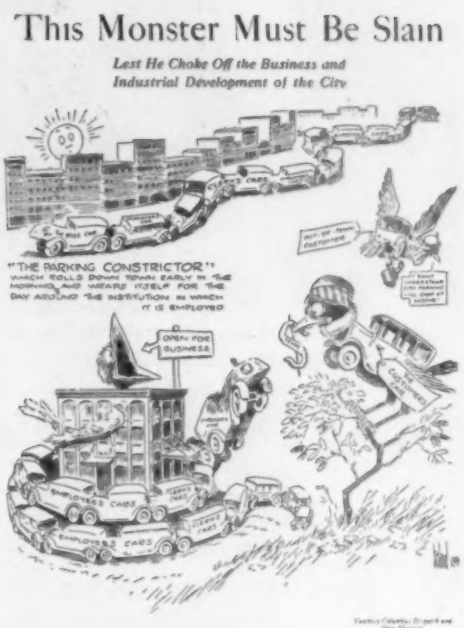
An examination of the forms of supervision over the tuberculin testing of cattle supplying cities with milk shows the large extent to which cities have accepted the so-called uniform plan of testing. This plan provides Federal and state indemnities for cattle which prove to be tuberculous and which are removed from the herd and slaughtered. The plan is followed by 634 cities. Cities that rely on municipal inspection alone number 498, while 117 other cities and towns use a combination of the two safeguards or make some other provision for tuberculin testing.

Some states, of which Florida is a typical example, receive large quantities of milk from other states. Florida does not have a state-wide tuberculin-testing law, but the city of Miami, for instance, requires pasteurization in addition to tuberculin testing. Much other milk received in the state is also pasteurized, since its origin, outside of the state, is beyond the jurisdiction of local inspectors. In several small towns tuberculin testing of cattle is conducted in response to a demand of patrons, though no ordinance requires it.

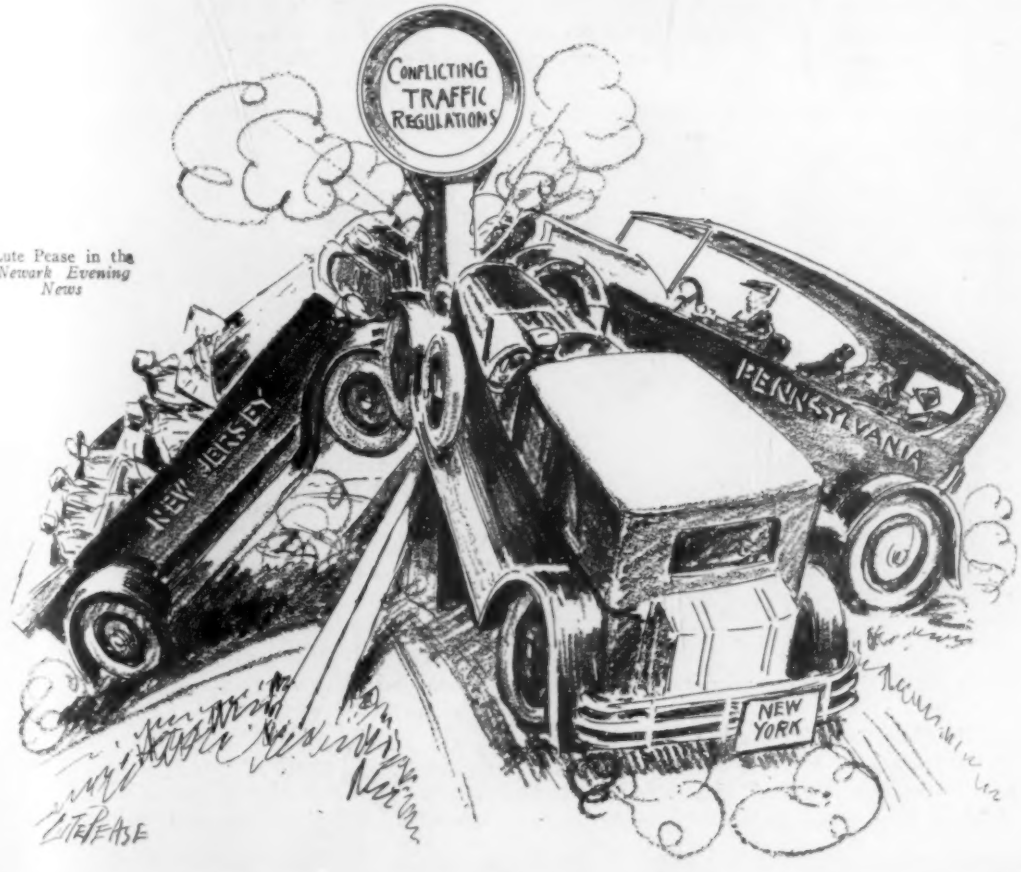
Trafficking in Humor


ONE-WAY TOWN
ONE WAY STREETS FOR ALL MANHATTAN" NEWS ITEM
ONE WAY PEDESTRIANS
ALL WAYS STREET FOR WOMEN DRIVERS
THIS MEANS YOU
ONE WAY TALK
TWO DOLLARS! HEY?
CASHIER
PAY HERE
ONE WAY JUDGE - TRAFFIC COURT
THE FIRST ONE WAY STREET IN MANHATTAN

Will B. Johnstone, in *The World*, New York


This Monster Must Be Slain
Lest He Choke Off the Business and Industrial Development of the City
"THE PARKING CONSTRICTOR"
WHICH ROLLS DOWN TOWN EARLY IN THE MORNING AND WRAPS ITSELF FOR THE DAY AROUND THE INSTITUTION IN WHICH IT IS EMPLOYED
OPEN FOR BUSINESS
EMPLOYEES CARS

Reproduced in *Toledo's Business* from the *Columbus Dispatch* and *Ohio Motorist*



Lute Pease in the *Newark Evening News*

Courtesy of Page Fence and Wire Products Association, Chicago, Ill.

TRAFFIC AND RECREATION ARE SAFELY SEPARATED BY THIS PLAYGROUND FENCE

The Four Points of Fencing

By Harry L. Allen

Playground and Recreation Association of America

WHILE there are many reasons for the fencing of playgrounds and recreational properties, the number depending upon local conditions, there are four that have universal application and may be considered major. These are:

1. Protection of life, or the safety factor
2. Protection for the administrative board
3. Protection for property
4. Ease of supervision

These factors are listed in what I believe to be their order of importance. That the safety factor is of first consideration is shockingly proved by the somber fact that last year approximately 6,000 children were killed by automobiles alone.

While playgrounds have ever justified themselves in the matter of accident reduction—it being known that children are far safer when on or near recreational property—the fact remains that the playground properly fenced has a still lower percentage of accidents than the playground that is not fenced.

Second in consideration is the fact that adequate fencing protects the members of the playground board by minimizing their responsibility to the public and vastly decreasing the liability of being called upon to sustain damage.

Only a few weeks ago—and such instances are not rare—an Illinois park board had suit brought against it by a citizen because his son's leg had been broken by a passing automobile when the child ran out from the municipal playground. The contention was that, inasmuch as the city had virtually invited the children to play on certain property, through the provision of playground equipment, it was also responsible, in a large measure, for the welfare of those children while there. The fact that the boy heedlessly ran into the street and into the path of an oncoming automobile while chasing an elusive football was held by the plaintiff to be a criminal negligence on the board's part. The boy, having lost his better judgment by reason of childish enthusiasm over a game, was, according to the plea, unaccountable for his own act; and it was contended that adequate fencing was as much a part of the playground equipment as the swings, flying rings, or other paraphernalia.

Few such cases ever get public attention (usually being settled out of court and without publicity), and it is very much a question whether the plaintiff could gain judgment if the suit were carried to a high court. The fact remains, however, that many boards feel called upon to settle such claims—and that the provision of adequate fencing is one means towards the elimination of such necessity.

Better Landscaping Permitted

Obviously, the installation of a reliable fence will add to the service life of the playground equipment. Swings, ladders, horizontal bars, etc., that are protected from the pranks of the mischievous or the depredations of the malicious will serve for a longer period than equipment not so protected.

An equally important factor is the better landscaping permitted by the protection of a fence. A fence allows not only better and more artistic placement and maintenance of

shrubs, but the use of the more delicate and perishable plants.

In this regard, however, it must be said that there is a great difference in fences. The older and now nearly obsolete wooden fence is not only unsightly, but considerably less efficient than the modern woven chain link fence. The latter type, when properly installed, not only enhances the beauty of the park or playground, but presents an impassable barrier to intruders. Service considered, the woven chain link fabric is, in my mind, the most economical fence.

Such a fence may directly border the cement walk, yet by its protection tulips, asters, chrysanthemums, peonies, and other delicate floral growth may be cultivated in absolute security. the frequently unused space adjoining a fence can very often be turned into a school garden and thereby employed for the betterment of the children's minds as well as their bodies. Without adequate protection this would be impossible.

Not the least important part adequate fencing plays in public property of this character is the psychological effect it has on nearby property owners. While perhaps recreational grounds could never be characterized as "unlovely," the naked, bare, unscreened playground is certainly no asset to a residential community; indeed, the intrusion of such a playground may be resented by the owners of the adjoining property, and petitions asking for its removal may result. All such disfavor can be successfully overcome by the installation of a woven chain link fence, followed by the planting of trees and shrubs on either side, which not only screen the playground but make the property a civic asset. A playground which has been beautified by skillful plantings becomes, in effect, a park, and its beauty is often sufficient to enhance the value of nearby residential property.

Ease of Supervision

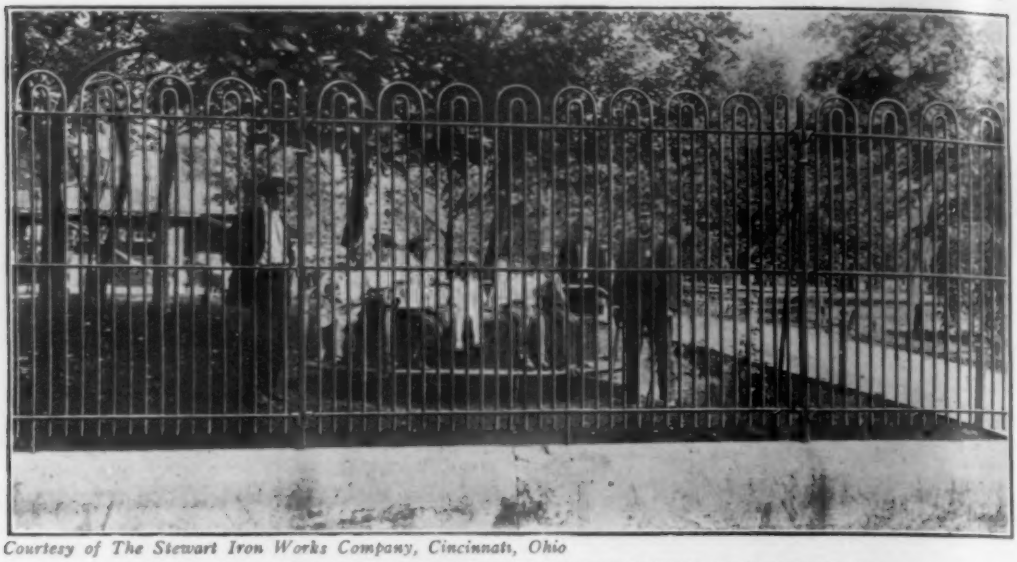
The fourth major reason for the fencing of playgrounds is the ease of supervision it makes possible. A sturdy fence minimizes costs by reducing the amount of care and maintenance required and by putting the ground, however large, under the absolute supervision or control of a comparatively few workers. When fenced, it is possible to open or close the playground at will—obviously impossible when unfenced. The presence of a non-climbable fence increases respect for public property and thereby reduces necessary maintenance work; when the ground is not in use the fence stands as a silent sentinel over the equipment.

Furthermore, fences usually enlarge playground attendance. Careful mothers will more willingly permit their children to play in a place that is well guarded than in one without protection.

In Memphis, Tenn., the park board has organized what it calls a "patrol system." This

Courtesy of Cyclone Fence Company, Waukegan, Ill.

THE SHRUBS IN THE PLAYGROUND, AND THE CHILDREN WHO PLAY AMONG THEM, ARE PROTECTED, YET NOT HIDDEN, BY THE FENCE



Courtesy of The Stewart Iron Works Company, Cincinnati, Ohio

IRON FENCE, TOO, IS USED EFFECTIVELY FOR PLAYGROUND PROTECTION

calls for the appointment of a 16-year old boy and a 16-year old girl in each city block tributary or near a public playground, whose duty it is to make regular scheduled trips to the playgrounds—at which time the mothers of younger children assign their little ones to the older boy or girl, who escorts them in safety across the streets and intersections to and from the playgrounds. This simple system of boy and girl escorts has tremendously increased the parents' willingness that their children should play in the public grounds. Indeed, during the first year of operation the registration at one playground was increased by 9,625—or something over 40 per cent. While doubtless the inauguration of the patrol system played a larger part than any other single fact in bringing about this large increase, it may safely be asserted that if the grounds had not been provided with reliable fences many of the mothers would have yet been hesitant to permit their children to play two, three or even four blocks distant.

In summary, let it be said that any one of the four points mentioned is sufficiently important to justify the installation of a fence. When considered collectively—and there are few communities wherein the entire four do not apply either in large or in small measure—there can remain but very exceptional cases where adequate fencing does not merit definite consideration.

Control of Rabies by Inoculation of Dogs

A STATE-WIDE law requiring the inoculation against rabies of all dogs before issuing licenses for them was advocated in the December *Bulletin* of the Department of Health, Newark, N. J. As there has been an increase in rabies among dogs in northern New Jersey for some time past, with a spread of this dangerous disease to other parts of the state, it is felt that comprehensive steps should be taken for its elimination. It is recognized that muzzling is an effective though harsh method of control, but difficult of enforcement. As an alternative, inoculation with an immunizing dose of rabies virus under the skin of the dog is suggested. This method, developed in Japan, has been tried out in Connecticut, with an attendant decrease of rabies, and several municipalities in the neighborhood of Newark have inoculation ordinances. Comparative data bearing on the results of these ordinances are as yet meager, but tend to show their effectiveness. In a few instances paralysis has followed the inoculation of a dog, and the period of protection from a single inoculation is not definitely known; but as against these objections it is claimed that the inoculation method:

1. Does not interfere with the liberty of the animal, which can run at large as an immune dog.
2. Gives protection from possible infection by bites from rabid dogs for one year.
3. Is painless and does not produce any lasting disability.
4. Protects family from possible bites by rabid family pet.
5. Is cheap, and can be given by any veterinarian.
6. Does not require a large field staff for its enforcement if no dog license is issued until an inoculation certificate is presented.
7. Is humane, and in line with modern procedures for the control of epidemic communicable diseases.

Old Brick Street Relaid Now Covers Larger Area

Great Saving in Cost of Material Results from Relaying Paving Bricks Flat Instead of on Edge

THE unique experience of getting something for nothing has been the privilege of Elizabeth City, N. C. The something consisted of half a mile of newly paved street, the material for which came from an old paved street.

This is how it happened: About a year ago an extensive program of city improvements was undertaken. It was decided to relay some five miles of vitrified brick street which had originally been laid from twelve to twenty years ago. The bricks had been placed on edge in a cushion of sand and had become very rough because of the seepage of water between the bricks and the consequent settling of the roadway.

Originally, the bricks had been laid edgewise, but M. W. Ferebee, City Manager, decided to relay them flat. It was found that with the bricks laid flat it required only 36 to cover a square yard, whereas it took 40 bricks laid on edge. Despite their long years of service, the bricks were found to be virtually undamaged when they were taken up, indicating that they were good for an indefinite number of years of additional service. The savings in bricks made possible by the change in laying them gave the city an additional half-mile of paving material for which it was obliged to pay only the cost of laying.

Because of experience with the earlier brick pavements, the sand cushion was discarded and instead a 3-inch clay-gravel foundation topped with ¾-inch of sand was used. This was compressed by a steam roller and when the bricks were relaid the joints were filled with liquid asphalt and finally given a surfacing of asphalt, brushed out to a thickness of about ⅛-inch.

Since the asphalt grouting will waterproof the pavement and keep the water from the foundations, it is believed that the new brick paving will last indefinitely without serious settling. City Manager Ferebee believes that the clay-gravel cushion is just as satisfactory as a concrete base, which is generally regarded as the ideal foundation for brick paving.

WEST CHURCH STREET, ELIZABETH CITY, N. C., REPAVED IN BRICK ON CONCRETE BASE

See pages 146-152 of the 1927 Municipal Index for an article on "The History and Development of Thin Brick Pavements."

New Financial Statistics of Cities

From the Forthcoming Report of the Bureau of the Census, U. S. Department of Commerce, for the Fiscal Year 1925

GOVERNMENTAL-COST PAYMENTS FOR EXPENSES OF MUNICIPAL DEPARTMENTS: 1925

	Group V Cities of 30,000 to 50,000	All General Departments	General Government	Protection to Person and Property	Conservation of Health	Sanitation	Highways	Charities, Hospitals, and Corrections
165	Woonsocket, R. I.	$1,322,745	$84,732	$405,815	$8,895	$86,101	$285,918	$47,573
	Per capita	26.50	1.70	8.13	0.18	1.72	5.73	0.95
	Per cent of total		6.4	30.7	0.7	6.5	21.6	3.6
166	New Castle, Pa	1,149,615	77,757	158,634	11,030	53,726	78,550	23,656
	Per capita	23.07	1.56	3.18	0.22	1.08	1.58	0.47
	Per cent of total		6.8	13.8	1.0	4.7	6.8	2.1
167	Beaumont, Tex.	889,036	64,619	206,256	22,705	48,030	127,444	3,413
	Per capita	17.90	1.30	4.15	0.46	0.97	2.57	0.07
	Per cent of total		7.3	23.3	2.6	5.4	14.4	0.4
168	McKeesport, Pa	1,305,800	75,698	201,298	19,888	104,193	146,156	.....
	Per capita	26.60	1.54	4.09	0.41	2.12	2.97	.....
	Per cent of total		5.8	15.4	1.5	8.0	11.2	.....
169	York, Pa	1,129,046	83,963	188,886	13,139	87,825	90,724	1,310
	Per capita	23.01	1.71	3.85	0.27	1.79	1.85	0.03
	Per cent of total		7.4	16.8	1.2	7.8	8.0	0.1
170	Haverhill, Mass.	1,952,807	91,707	365,123	68,507	97,477	209,913	277,376
	Per capita	39.84	1.87	7.45	1.40	1.99	4.29	5.66
	Per cent of total		4.7	18.7	3.5	5.0	10.7	14.2
171	Bay City, Mich.	1,338,579	72,978	322,455	10,644	37,978	137,441	42,663
	Per capita	27.44	1.50	6.61	0.22	0.78	2.82	0.87
	Per cent of total		5.5	24.1	0.8	2.8	10.3	3.2
172	Elmira, N. Y.	1,448,152	113,846	239,422	26,333	66,210	160,692	90,489
	Per capita	29.92	2.35	5.94	0.54	1.37	3.32	1.87
	Per cent of total		7.9	16.5	1.8	4.6	11.1	6.2
173	Charleston, W. Va.	1,199,619	70,225	283,914	37,434	96,438	52,832	17,264
	Per capita	24.91	1.46	5.89	0.78	2.00	1.10	0.36
	Per cent of total		5.9	23.7	3.1	8.0	4.4	1.4
174	Medford, Mass.	1,548,998	112,614	276,940	17,321	137,940	139,085	42,162
	Per capita	32.25	2.34	5.76	0.36	2.87	2.90	0.88
	Per cent of total		7.3	17.9	1.1	8.9	9.0	2.7
175	Galveston, Tex.	1,214,204	60,261	268,336	23,145	75,709	143,362	219,269
	Per capita	25.30	1.26	5.59	0.48	1.58	2.99	4.57
	Per cent of total		5.0	22.1	1.9	6.2	11.8	18.1
176	Pontiac, Mich.	1,274,079	98,090	211,409	37,858	67,666	90,513	70,984
	Per capita	26.85	2.07	4.46	0.80	1.43	1.90	1.50
	Per cent of total		7.7	16.5	3.0	5.3	7.1	5.6
177	Chelsea, Mass.	1,828,994	109,381	425,687	35,116	109,814	179,678	112,893
	Per capita	38.55	2.31	8.97	0.74	2.31	3.79	2.38
	Per cent of total		6.2	23.3	1.9	6.0	9.8	6.2
178	Stockton, Calif.	1,700,767	129,373	350,501	1,200	115,135	116,136	13,888
	Per capita	35.97	2.74	7.41	0.03	2.43	2.46	0.29
	Per cent of total		7.6	20.7	0.1	6.8	6.8	0.8
179	Perth Amboy, N. J.	1,255,261	75,054	224,145	29,871	111,554	101,989	22,266
	Per capita	26.63	1.59	4.75	0.63	2.37	2.16	0.47
	Per cent of total		6.0	17.8	2.4	8.9	8.1	1.8
180	Pittsfield, Mass.	1,418,354	78,549	245,695	43,734	65,204	163,792	45,503
	Per capita	30.10	1.67	5.21	0.93	1.38	3.48	0.97
	Per cent of total		5.5	17.3	3.1	4.6	11.5	3.2
181	Lexington, Ky.	1,100,076	72,954	265,829	34,908	75,694	136,803	82,874
	Per capita	23.46	1.56	5.67	0.74	1.61	2.91	1.77
	Per cent of total		6.6	24.2	3.2	6.9	12.5	7.5
182	Lima, Ohio	879,376	62,580	120,306	11,511	30,286	101,319	3,266
	Per capita	18.82	1.34	2.58	0.25	0.65	2.17	0.07
	Per cent of total		7.1	13.7	1.3	3.4	11.5	0.4
183	Madison, Wis.	1,794,286	97,134	285,234	45,429	163,226	126,804	23,929
	Per capita	38.68	2.09	6.15	0.98	3.52	2.73	0.52
	Per cent of total		5.4	15.8	2.5	9.1	7.1	1.3
184	Newport News, Va.	733,554	75,768	166,302	16,412	49,370	57,608	31,325
	Per capita	15.86	1.64	3.59	0.35	1.07	1.25	0.68
	Per cent of total		10.3	22.7	2.2	6.7	7.8	4.3
185	Montgomery, Ala.	886,589	71,977	220,222	23,169	77,335	90,259	16,426
	Per capita	19.19	1.56	4.76	0.50	1.67	1.95	0.36
	Per cent of total		8.1	24.9	2.6	8.7	10.2	1.9
186	Greensboro, N. C.	930,753	93,409	156,219	36,296	52,586	68,387	15,075
	Per capita	20.15	2.02	3.38	0.79	1.14	1.48	0.33
	Per cent of total		10.0	16.8	3.9	5.6	7.3	1.6
187	East Chicago, Ind.	1,223,242	71,762	264,948	20,126	120,818	61,951	.....
	Per capita	26.84	1.57	5.81	0.44	2.65	1.36	.....
	Per cent of total		5.9	21.6	1.6	9.9	5.1	.....
188	New Rochelle, N. Y.	2,932,279	186,253	599,027	34,312	244,514	521,644	81,649
	Per capita	66.13	4.20	13.50	0.77	5.51	11.77	1.84
	Per cent of total		6.4	20.4	1.2	8.3	17.8	2.8
189	Columbia, Ga.	893,942	69,671	208,239	25,138	78,711	64,616	96,776
	Per capita	20.20	1.57	4.71	0.57	1.78	1.46	2.19
	Per cent of total		7.8	23.3	2.8	8.8	7.2	10.8
190	Evanston, Ill.	1,889,178	99,657	344,113	34,163	128,568	151,907	1,590
	Per capita	43.05	2.27	7.84	0.78	2.93	3.46	0.04
	Per cent of total		5.3	18.2	1.8	6.8	8.1	0.1
191	Pueblo, Colo.	1,097,301	73,573	219,769	35,453	22,377	131,548	2,959
	Per capita	25.06	1.68	5.01	0.81	0.51	3.00	0.07
	Per cent of total		6.7	20.0	3.2	2.0	12.0	0.3
192	Fitchburg, Mass.	1,635,970	78,373	281,157	52,845	72,620	239,187	198,310
	Per capita	37.45	1.79	6.44	1.21	1.66	5.47	4.54
	Per cent of total		4.8	17.2	3.2	4.4	14.7	12.1

For similar figures for cities of over 100,000 *population, see* THE MUNICIPAL INDEX *for* 1927.

Statistics for places of from 50,000 *to* 100,000 *were published in* THE AMERICAN CITY *last month.*

GOVERNMENTAL-COST PAYMENTS, CONTINUED

Schools	Libraries	Recreation	Miscellaneous	NET DEBT Total	NET DEBT Per Capita	Per Capita Assessed Valuation for City Government	Per Capita Levy for All Purposes	Per Capita Levy for Government of City	Estimated Population
$352,889	$7,001	$16,001	$27,820	$6,231,511	$124.82	$1,638.92	$39.21	$37.24	49,923
7.07	0.14	0.32	0.56						
26.7	0.5	1.2	2.1						
675,451	15,218	9,950	45,643	2,480,611	49.77	1,084.60	31.06	24.67	49,842
13.55	0.31	0.20	0.92						
58.8	1.3	0.9	4.0						
391,690	527	23,559	793	4,390,667	88.39	1,005.14	36.98	23.21	49,671
7.89	0.01	0.47	0.02						
44.1	0.1	2.6	0.1						
704,008	8,000	14,089	32,470	2,257,756	45.99	896.21	32.47	25.09	49,097
14.34	0.16	0.29	0.66						
53.9	0.6	1.1	2.5						
602,803	2,272	23,632	34,492	1,946,765	39.67	950.75	28.84	22.82	49,074
12.28	0.05	0.48	0.70						
53.4	0.2	2.1	3.1						
656,322	39,474	50,092	96,816	1,454,438	29.68	1,350.30	41.05	36.28	49,011
13.39	0.81	1.02	1.98						
33.6	2.0	2.6	5.0						
668,828	22,934	11,836	10,822	4,192,870	85.95	982.58	35.68	28.21	48,784
13.71	0.47	0.24	0.22						
50.0	1.7	0.9	0.8						
630,756	12,557	27,937	79,910	3,616,800	74.72	927.17	38.20	28.91	48,403
13.03	0.26	0.58	1.65						
43.6	0.9	1.9	5.5						
605,804	9,532	10,413	15,763	2,771,362	57.54	2,185.33	46.42	33.54	48,163
12.58	0.20	0.22	0.33						
50.5	0.8	0.9	1.3						
648,716	16,905	55,405	101,910	2,468,034	51.38	1,237.44	41.08	37.66	48,036
13.50	0.35	1.15	2.12						
41.9	1.1	3.6	6.6						
389,017	.....	19,217	15,888	6,183,850	128.83	1,173.25	41.11	23.46	48,000
8.10	.....	0.40	0.33						
32.0	.....	1.6	1.3						
637,918	15,997	27,493	16,151	4,341,701	91.49	1,099.74	50.16	38.12	47,455
13.44	0.34	0.58	0.34						
50.1	1.3	2.2	1.3						
644,096	25,678	62,474	124,177	2,755,904	58.09	1,110.92	43.10	41.04	47,440
13.58	0.54	1.32	2.62						
35.2	1.4	3.4	6.8						
797,131	38,863	78,388	60,152	4,246,201	89.80	1,338.70	48.10	31.34	47,287
16.86	0.82	1.66	1.27						
46.9	2.3	4.6	3.5						
590,976	16,440	14,996	67,970	5,426,663	115.13	886.44	42.56	29.73	47,136
12.54	0.35	0.32	1.44						
47.1	1.3	1.2	5.4						
655,754	37,450	23,780	58,893	2,495,000	52.95	1,161.64	35.08	30.53	47,120
13.92	0.79	0.50	1.25						
46.2	2.6	1.7	4.2						
379,711	8,884	33,338	9,081	1,713,923	36.55	1,085.54	36.93	24.70	46,895
8.10	0.19	0.71	0.19						
34.5	0.8	3.0	0.8						
508,844	15,058	5,866	20,340	5,188,050	111.05	1,740.37	42.12	34.30	46,717
10.89	0.32	0.13	0.44						
57.9	1.7	0.7	2.3						
895,408	39,159	73,278	44,685	4,310,550	92.93	2,881.37	63.37	51.22	46,385
19.30	0.84	1.58	0.96						
49.9	2.2	4.1	2.5						
304,094	1,200	2,218	29,257	2,572,022	55.62	933.24	20.89	17.86	46,239
6.58	0.03	0.05	0.63						
41.5	0.2	0.3	4.0						
299,966	6,153	28,811	52,271	3,855,485	83.44	743.11	24.15	11.52	46,206
6.49	0.13	0.62	1.13						
33.8	0.7	3.2	5.9						
483,886	14,748	1,355	8,792	3,957,392	85.66	1,834.08	35.15	19.56	46,197
10.47	0.32	0.03	0.19						
52.0	1.6	0.1	0.9						
564,396	31,136	66,792	21,313	3,925,517	86.12	1,660.69	41.43	31.22	45,580
12.38	0.68	1.47	0.47						
46.1	2.5	5.5	1.7						
1,015,715	30,226	123,560	95,379	5,878,251	132.56	2,555.31	72.06	61.33	44,343
22.91	0.68	2.79	2.15						
34.6	1.0	4.2	3.3						
289,552	5,194	33,535	22,510	2,250,729	50.87	1,007.50	28.17	18.13	44,244
6.54	0.12	0.76	0.51						
32.4	0.6	3.8	2.5						
982,785	37,098	76,216	33,081	2,638,551	60.13	624.88	69.76	57.14	43,883
22.40	0.85	1.74	0.75						
52.0	2.0	4.0	1.8						
534,456	8,763	50,930	17,473	3,157,911	72.12	821.53	42.71	31.66	43,787
12.21	0.20	1.16	0.40						
48.7	0.8	4.6	1.6						
568,886	12,072	27,473	105,047	2,450,757	56.10	1,361.87	39.77	36.37	43,689
13.02	0.28	0.63	2.40						
34.8	0.7	1.7	6.4						

GOVERNMENTAL-COST PAYMENTS FOR EXPENSES OF MUNICIPAL DEPARTMENTS: 1925

	Group V—Continued. Cities of 30,000 to 50,000	All General Departments	General Government	Protection to Person and Property	Conservation of Health	Sanitation	Highways	Charities, Hospitals, and Corrections
193	San Jose, Calif.	1,370,793	62,208	229,553	30,165	56,727	77,456	.....
	Per capita	31.51	1.43	5.28	0.69	1.30	1.78	.....
	Per cent of total		4.5	16.7	2.2	4.1	5.7	.....
194	Waco, Tex.	1,076,327	56,466	235,597	19,997	41,416	175,988	18,941
	Per capita	24.89	1.31	5.46	0.46	0.96	4.07	0.44
	Per cent of total		5.2	21.9	1.9	3.8	16.4	1.8
195	Muskegon, Mich.	1,165,530	63,784	192,720	33,581	73,490	48,724	53,134
	Per capita	27.05	1.48	4.47	0.78	1.71	1.13	1.23
	Per cent of total		5.5	16.5	2.9	6.3	4.2	4.6
196	Brookline, Mass.	2,314,839	128,869	505,146	90,420	236,937	335,903	28,247
	Per capita	53.94	3.00	11.77	2.11	5.52	7.82	0.66
	Per cent of total		5.6	21.9	3.9	10.2	14.5	1.2
197	Salem, Mass.	1,620,150	85,220	280,450	87,585	156,109	189,299	130,314
	Per capita	37.82	1.99	6.55	2.04	3.64	4.42	3.04
	Per cent of total		5.3	17.3	5.4	9.6	11.7	8.0
198	Jamestown, N. Y.	1,462,621	78,117	238,306	25,158	56,543	138,544	158,723
	Per capita	34.18	1.83	5.57	0.59	1.32	3.24	3.71
	Per cent of total		5.3	16.3	1.7	3.9	9.5	10.9
199	Butte, Mont.	926,837	67,217	172,276	6,353	126,915	83,986	1,841
	Per capita	21.70	1.57	4.04	0.15	2.97	1.97	0.04
	Per cent of total		7.3	18.6	0.7	13.7	9.1	0.2
200	Williamsport, Pa.	993,667	53,327	149,167	17,637	16,830	121,155	40,164
	Per capita	23.29	1.25	3.49	0.41	0.39	2.84	0.94
	Per cent of total		5.4	15.0	1.8	1.7	12.2	4.0
201	Muncie, Ind.	906,374	52,849	164,197	7,271	30,823	64,438	2,221
	Per capita	21.33	1.24	3.86	0.17	0.73	1.52	0.05
	Per cent of total		5.8	18.1	0.8	3.4	7.1	0.2
202	Hamilton, Ohio.	826,968	77,807	123,980	16,172	26,315	65,571	9,578
	Per capita	19.52	1.84	2.92	0.38	0.62	1.55	0.23
	Per cent of total		9.4	15.0	2.0	3.2	7.9	1.2
203	Lorain, Ohio.	1,050,991	86,739	186,878	20,011	28,825	107,182	8,575
	Per capita	24.87	2.05	4.43	0.47	0.68	2.54	0.20
	Per cent of total		8.3	17.8	1.9	2.7	10.2	0.8
204	Everett, Mass.	1,619,047	88,365	327,459	26,637	110,279	109,149	72,619
	Per capita	38.40	2.10	7.76	0.63	2.62	2.59	1.72
	Per cent of total		5.5	20.3	1.6	6.8	6.7	4.5
205	Chicopee, Mass.	1,299,571	69,918	250,544	36,122	69,853	190,874	93,806
	Per capita	30.90	1.66	5.95	0.86	1.66	4.54	2.23
	Per cent of total		5.4	19.2	2.8	5.4	14.7	7.2
206	Springfield, Mo.	850,199	47,910	170,747	8,001	31,549	67,138	29,771
	Per capita	20.29	1.14	4.07	0.19	0.75	1.60	0.71
	Per cent of total		5.6	20.1	0.9	3.7	7.9	3.5
207	Battle Creek, Mich.	1,025,872	66,912	195,749	29,754	20,249	78,790	4,125
	Per capita	24.72	1.61	4.72	0.72	0.49	1.90	0.10
	Per cent of total		6.5	19.1	2.9	2.0	7.7	0.4
208	Durham, N. C.	733,376	72,352	138,298	14,258	66,705	73,927	21,725
	Per capita	17.75	1.75	3.35	0.35	1.61	1.79	0.53
	Per cent of total		9.9	18.8	1.9	9.1	10.1	3.0
209	Columbia, S. C.	853,713	50,509	211,289	24,930	66,798	114,539	27,297
	Per capita	20.71	1.23	5.12	0.60	1.62	2.78	0.66
	Per cent of total		5.9	24.7	2.9	7.8	13.4	3.2
210	Dubuque, Iowa	974,301	52,959	220,671	11,710	64,141	104,431	3,798
	Per capita	23.82	1.29	5.39	0.29	1.57	2.56	0.09
	Per cent of total		5.4	22.7	1.2	6.6	10.7	0.4
211	Stamford, Conn.	1,690,523	128,600	316,161	21,734	138,745	199,300	53,886
	Per capita	41.55	3.16	7.77	0.53	3.41	4.90	1.32
	Per cent of total		7.6	18.7	1.3	8.2	11.8	3.2
212	Joliet, Ill.	1,092,609	82,989	172,369	9,343	22,252	108,885	1,800
	Per capita	26.93	2.05	4.25	0.23	0.55	2.68	0.04
	Per cent of total		7.6	15.8	0.9	2.0	10.0	0.2
213	Aurora, Ill.	896,551	84,278	172,132	12,871	45,266	86,749	.....
	Per capita	22.27	2.09	4.28	0.32	1.12	2.16	.....
	Per cent of total		9.4	19.2	1.4	5.0	9.7	.....
214	Superior, Wis.	1,301,267	80,615	334,007	21,170	44,485	82,187	2,478
	Per capita	32.80	2.03	8.42	0.53	1.12	2.07	0.06
	Per cent of total		6.2	25.7	1.6	3.4	6.3	0.2
215	Council Bluffs, Iowa	937,117	42,375	105,440	5,666	49,625	82,579	.....
	Per capita	23.66	1.07	2.66	0.14	1.25	2.08	.....
	Per cent of total		4.5	11.2	0.6	5.3	8.8	.....
216	Rock Island, Ill.	663,718	44,123	100,312	23,895	36,204	38,534	.....
	Per capita	16.84	1.12	2.55	0.61	0.92	0.98	.....
	Per cent of total		6.6	15.1	3.6	5.5	5.8	.....
217	Taunton, Mass.	1,191,779	70,220	246,543	49,718	50,750	138,740	90,568
	Per capita	30.31	1.79	6.28	1.26	1.29	3.53	2.30
	Per cent of total		5.9	20.6	4.2	4.3	11.6	7.6
218	Portsmouth, Ohio.	755,609	66,730	100,714	6,886	24,858	68,200	57,609
	Per capita	19.33	1.71	2.57	0.18	0.64	1.74	1.47
	Per cent of total		8.8	13.3	0.9	3.3	9.0	7.6
219	Quincy, Ill.	807,059	55,770	166,785	16,777	32,096	84,982	9,180
	Per capita	20.81	1.44	4.30	0.43	0.83	2.19	0.24
	Per cent of total		6.9	20.7	2.1	4.0	10.5	1.1
220	New Brunswick, N. J.	1,233,578	74,145	254,331	18,922	112,441	103,373	32,576
	Per capita	32.48	1.95	6.69	0.50	2.96	2.72	0.86
	Per cent of total		6.0	20.6	1.5	9.1	8.4	2.6
221	Austin, Tex.	905,172	57,893	140,185	9,075	66,617	105,975	71,582
	Per capita	24.00	1.53	3.72	0.24	1.77	2.81	1.90
	Per cent of total		6.4	15.5	1.0	7.4	11.7	7.9
222	Ogden, Utah	929,590	71,292	140,577	10,821	34,075	87,275	6,129
	Per capita	25.21	1.93	3.81	0.29	0.92	2.37	0.17
	Per cent of total		7.7	15.0	1.2	3.7	9.4	0.7

GOVERNMENTAL-COST PAYMENTS, CONTINUED

Schools	Libraries	Recreation	Miscellaneous	NET DEBT Total	NET DEBT Per Capita	Per Capita Assessed Valuation for City Government	Per Capita Levy for All Purposes	Per Capita Levy for Government of City	Estimated Population
845,881	17,024	39,697	12,082	2,565,064	58.97	787.78	37.27	24.27	43,497
19.45	0.39	0.91	0.28						
61.7	1.2	2.9	0.9						
475,111	13,961	34,600	4,250	3,098,440	71.65	1,227.74	40.50	28.48	43,242
10.99	0.32	0.80	0.10						
44.1	1.3	3.2	4.0						
625,351	43,121	21,945	9,671	3,099,580	71.94	1,397.92	47.17	34.72	43,088
14.51	1.00	0.51	0.22						
53.7	3.7	1.9	0.8						
612,239	63,881	207,431	105,766	1,918,235	44.70	3,187.70	61.20	52.34	42,914
14.27	1.49	4.83	2.46						
26.4	2.8	9.0	4.6						
483,200	26,896	70,754	110,323	2,258,985	52.74	1,223.50	39.76	35.36	42,833
11.28	0.63	1.65	2.58						
29.8	1.7	4.4	6.8						
690,011	.....	24,816	52,403	3,422,386	79.98	748.80	37.62	30.71	42,790
16.13	.....	0.58	1.22						
47.2	.....	1.7	3.6						
412,697	22,143	7,197	26,212	1,703,668	39.89	453.03	32.35	20.30	42,714
9.66	0.52	0.17	0.61						
44.5	2.4	0.8	2.8						
513,090	6,488	29,292	46,517	,1065,605	24.98	797.62	30.35	25.21	42,656
12.03	0.15	0.69	1.09						
51.6	0.7	2.9	4.7						
529,192	15,757	28,447	11,179	1,381,302	32.51	1,462.93	37.74	25.89	42,491
12.45	0.37	0.67	0.26						
58.4	1.7	3.1	1.2						
411,642	8,130	40,977	46,796	3,604,363	85.08	2,496.62	41.44	33.45	42,364
9.72	0.19	0.97	1.10						
49.8	1.0	5.0	5.7						
539,214	11,168	26,112	36,287	3,954,319	93.57	1,471.54	37.61	31.50	42,259
12.76	0.26	0.62	0.86						
51.3	1.1	2.5	3.5						
705,940	27,055	58,142	93,402	1,715,796	40.69	1,319.30	4.248	38.33	42,164
16.74	0.64	1.38	2.22						
43.6	1.7	3.6	5.8						
514,348	15,137	18,826	40,143	1,806,850	42.96	1,189.67	35.09	30.66	42,060
12.23	0.36	0.45	0.95						
39.6	1.2	1.4	3.1						
454,476	16,014	23,568	1,025	712,735	17.01	919.21	27.02	21.14	41,912
10.84	0.38	0.56	0.02						
53.5	1.9	2.8	0.1						
574,393	14,078	37,339	4,483	668,042	16.10	1,289.45	40.63	31.20	41,494
13.84	0.34	0.90	0.11						
56.0	1.4	3.6	0.4						
311,767	5,900	2,856	25,588	3,968,626	96.07	1,380.62	29.68	15.88	[1]41,310
7.55	0.14	0.07	0.62						
42.5	0.8	0.4	3.5						
324,712	1,500	19,613	12,526	2,470,547	59.93	437.98	33.07	19.71	41,225
7.88	0.04	0.48	0.30						
38.0	0.2	2.3	1.5						
441,116	17,152	30,772	27,551	2,933,208	71.71	429.13	39.99	30.24	40,903
10.78	0.42	0.75	0.67						
45.3	1.8	3.2	2.8						
722,713	25,000	43,307	41,077	3,856,738	94.79	1,488.06	52.19	50.41	40,689
17.76	0.61	1.06	1.01						
42.8	1.5	2.6	2.4						
623,145	19,400	27,451	24,975	1,637,150	40.35	347.64	35.70	28.09	40,578
15.36	0.48	0.68	0.62						
57.0	1.8	2.5	2.3						
430,568	17,107	36,024	11,556	1,328,161	32.99	430.53	37.80	28.76	42,254
10.70	0.42	0.89	0.29						
48.0	1.9	4.0	1.3						
652,780	23,274	15,627	44,644	2,120,043	53.44	1,492.50	42.31	30.09	[2]39,671
16.45	0.59	0.39	1.13						
50.2	1.8	1.2	3.4						
582,795	17,061	27,107	24,469	2,026,721	51.16	282.90	33.72	28.57	39,612
14.71	0.43	0.68	0.62						
62.2	1.8	2.9	2.6						
371,449	12,963	22,845	13,393	444,926	11.29	300.44	25.42	19.52	39,405
9.43	0.33	0.58	0.34						
56.0	2.0	3.4	2.0						
456,281	13,745	24,454	50,760	2,043,824	51.98	1,028.89	30.04	26.98	39,320
11.60	0.35	0.62	1.29						
38.3	1.2	2.1	4.3						
393,692	5,053	3,066	28,801	3,202,417	81.93	1,515.69	36.38	26.37	39,087
10.07	0.13	0.08	0.74						
52.1	0.7	0.4	3.8						
375,200	10,803	41,234	14,232	162,500	4.19	475.14	30.27	23.71	38,782
9.67	0.28	1.06	0.37						
46.5	1.3	5.1	1.8						
552,253	18,800	17,553	49,184	3,167,754	83.40	915.27	41.85	28.51	37,984
14.54	0.49	0.46	1.29						
44.8	1.5	1.4	4.0						
396,459	.....	43,533	13,853	2,968,194	78.70	1,047.86	35.63	23.05	37,717
10.51	.....	1.15	0.37						
43.8	.....	4.8	1.5						
537,728	9,536	12,937	19,200	3,626,283	98.36	1,066.38	38.28	23.99	36,869
14.58	0.26	0.35	0.52						
57.8	1.0	1.4	2.1						

[1] Includes population residing within the territory annexed in April, 1925. [2] Population as of Jan. 1, 1920.

GOVERNMENTAL-COST PAYMENTS FOR EXPENSES OF MUNICIPAL DEPARTMENTS: 1925

	Group V—Continued. Cities of 30,000 to 50,000	All General Departments	General Government	Protection to Person and Property	Conservation of Health	Sanitation	Highways	Charities, Hospitals, and Corrections
223	Kokomo, Ind.	619,464	41,639	139,857	5,116	27,528	47,927	.....
	Per capita	16.81	1.13	3.79	0.14	0.75	1.30	.....
	Per cent of total		6.7	22.6	0.8	4.4	7.7	.....
224	Easton, Pa.	953,050	72,317	129,443	6,941	86,378	100,939	.....
	Per capita	25.89	1.96	3.52	0.19	2.35	2.74	.....
	Per cent of total		7.6	13.6	0.7	9.1	10.6	.....
225	Waterloo, Iowa	950,405	46,876	196,067	6,815	27,090	58,738	.....
	Per capita	25.87	1.28	5.33	0.19	0.74	1.60	.....
	Per cent of total		4.9	20.7	0.7	2.9	6.2	.....
226	Wilmington, N. C.	761,933	41,029	149,244	23,322	84,928	86,073	48,759
	Per capita	20.78	1.12	4.06	0.64	2.32	2.35	1.33
	Per cent of total		5.4	19.6	3.1	11.1	11.3	6.4
227	Danville, Ill.	717,632	41,187	168,865	4,329	44,857	53,476	1,200
	Per capita	19.60	1.12	4.61	0.12	1.23	1.46	0.03
	Per cent of total		5.7	23.5	0.6	6.3	7.5	0.2
228	Hazleton, Pa.	804,226	47,078	71,440	7,988	31,083	118,704	.....
	Per capita	22.25	1.30	1.97	0.22	0.86	3.28	.....
	Per cent of total		5.9	9.0	1.0	3.9	14.8	.....
229	Auburn, N. Y.	1,018,502	66,088	209,645	32,514	71,313	126,577	48,247
	Per capita	28.52	1.85	5.87	0.91	2.00	3.54	1.35
	Per cent of total		6.5	20.6	3.2	7.0	12.4	4.7
230	Poughkeepsie, N. Y.	1,090,459	59,272	131,155	110,264	83,566	111,115	51,942
	Per capita	30.56	1.66	3.67	3.09	2.34	3.11	1.46
	Per cent of total		5.4	12.0	10.1	7.7	10.2	4.8
231	Orange, N. J.	1,112,115	68,088	217,191	26,750	94,351	91,592	42,839
	Per capita	31.43	1.92	6.13	0.76	2.67	2.59	1.21
	Per cent of total		6.1	19.6	2.4	8.5	8.2	3.9
232	Petersburg, Va.	670,921	80,322	144,811	24,817	49,126	55,328	23,564
	Per capita	18.98	2.27	4.09	0.70	1.39	1.56	0.67
	Per cent of total		12.0	21.6	3.7	7.3	8.2	3.5
233	Amsterdam, N. Y.	1,020,831	67,830	155,264	31,916	79,772	128,589	26,342
	Per capita	28.93	1.92	4.40	0.90	2.26	3.65	0.75
	Per cent ot total		+ 6.6	15.3	3.1	7.8	12.6	2.6
234	Waltham, Mass.	1,241,410	76,823	226,267	22,275	99,262	161,214	47,561
	Per capita	35.48	2.20	6.47	0.64	2.84	4.60	1.36
	Per cent of total		6.2	18.3	1.8	8.0	13.0	3.8
235	Norristown, Pa.	588,891	30,411	79,696	5,501	22,425	69,454	42
	Per capita	16.90	0.87	2.28	0.16	0.64	1.99	(1)
	Per cent of total		5.2	13.5	0.9	3.8	11.8	(2)
236	Lewiston, Me.	676,539	53,454	144,111	11,745	27,316	127,005	65,404
	Per capita	19.63	1.55	4.18	0.34	0.79	3.69	1.90
	Per cent of total		7.9	21.3	1.7	4.0	18.8	9.7
237	Green Bay, Wis.	988,396	52,974	185,260	9,672	27,086	115,508	23,785
	Per capita	28.82	1.54	5.41	0.28	0.79	3.37	0.69
	Per cent of total		5.4	18.8	1.0	2.7	11.7	2.4
238	Sheboygan, Wis.	1,043,353	65,818	176,328	8,361	44,514	123,149	23,691
	Per capita	31.11	1.96	5.26	0.25	1.33	3.67	0.71
	Per cent of total		6.3	16.8	0.8	4.3	11.8	2.3
139	Moline, Ill.	751,325	47,343	110,947	5,533	40,893	54,347	58,547
	Per capita	22.44	1.41	3.32	0.17	1.22	1.62	1.75
	Per cent of total		6.3	14.8	0.7	5.4	7.2	7.8
240	Oshkosh, Wis.	1,136,432	63,172	218,967	13,537	35,494	158,666	34,593
	Per capita	34.21	1.90	6.59	0.41	1.07	4.77	1.04
	Per cent of total		5.6	19.3	1.2	3.1	13.9	3.0
241	Elgin, Ill.	693,846	51,401	116,454	8,545	29,840	56,279	1,800
	Per capita	21.05	1.56	3.54	0.26	0.91	1.71	0.05
	Per cent of total		7.4	16.7	1.2	4.3	8.1	0.3
242	Watertown, N. Y.	1,088,881	83,321	168,454	29,712	38,952	158,440	72,629
	Per capita	33.28	2.55	5.15	0.91	1.19	4.84	2.22
	Per cent of total		7.7	15.5	2.7	3.6	14.5	6.7
243	Muskogee, Okla.	829,996	40,352	149,022	11,137	16,695	74,580	64,385
	Per capita	25.94	1.26	4.66	0.35	0.52	2.33	2.01
	Per cent of total		4.9	17.9	1.3	2.0	9.0	7.8
244	La Crosse, Wis.	949,941	53,780	184,800	10,705	30,145	96,239	2,557
	Per capita	31.23	1.77	6.08	0.35	0.99	3.16	0.08
	Per cent of total		5.7	19.5	1.1	3.2	10.1	0.3
245	Newburgh, N. Y.	948,973	48,925	122,465	10,414	67,688	147,959	92,523
	Per capita	31.20	1.61	4.02	0.34	2.23	4.87	3.04
	Per cent of total		5.2	13.0	1.1	7.1	15.6	9.7
246	Lynchburg, Va.	932,205	83,935	186,774	30,883	67,797	104,052	81,607
	Per capita	30.66	2.76	6.15	1.02	2.23	3.42	2.68
	Per cent of total		9.0	20.1	3.3	7.3	11.1	8.8
247	Colorado Springs, Colo.	1,098,779	58,613	151,183	23,199	19,444	92,517	4,841
	Per capita	36.50	1.95	5.02	0.77	0.65	3.07	0.16
	Per cent of total		5.3	13.8	2.1	1.8	8.4	0.4

[1] Less than one-half of 1 cent.
[2] Less than one-twentieth of 1 per cent.

Rank in Population

according to the estimates of the Bureau of the Census for 1925 *is indicated by the numbers at the left of the city names.*

Statistics for the 81 *largest cities—those of over* 100,000 *population—are given in the* 1927 MUNICIPAL INDEX. *Similar statistics for places of* 50,000 *to* 100,000 *were published in* THE AMERICAN CITY *last month.*

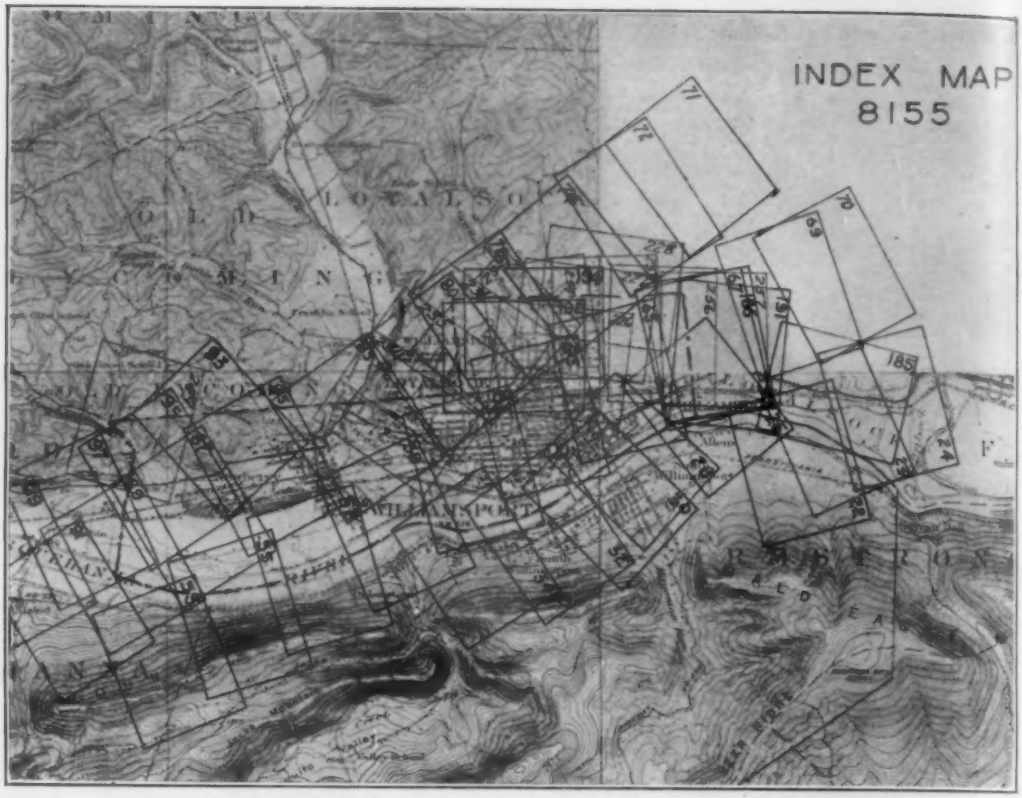
GOVERNMENTAL-COST PAYMENTS, CONTINUED

Schools	Libraries	Recreation	Miscellaneous	NET DEBT Total	Per Capita	Per Capita Assessed Valuation for City Government	Per Capita Levy for All Purposes	Per Capita Levy for Government of City	Estimated Population
326,028	7,039	17,109	7,221	612,389	16.62	1,108.97	29.50	19.74	36,855
8.85	0.19	0.46	0.20						
52.6	1.1	2.8	1.2						
478,647	21,841	14,804	41,740	3,510,040	95.36	1,037.69	37.72	31.65	36,810
13.00	0.59	0.40	1.13						
50.2	2.3	1.6	4.4						
561,941	24,967	15,381	12,530	2,742,183	74.63	430.40	43.14	35.87	36,743
15.29	0.68	0.42	0.34						
59.1	2.6	1.6	1.3						
313,712	3,911	1,417	9,538	3,042,271	82.96	1,178.37	26.51	21.39	36,670
8.56	0.11	0.04	0.26						
41.2	0.5	0.2	1.3						
356,096	18,046	26,381	3,195	991,432	27.08	415.13	30.96	23.72	36,615
9.73	0.49	0.72	0.09						
49.6	2.5	3.7	0.4						
476,115	11,700	1,815	38,303	2,286,836	63.27	715.25	29.55	24.32	36,143
13.17	0.32	0.05	1.06						
59.2	1.5	0.2	4.8						
387,776	7,800	11,023	57,519	936,628	26.22	782.36	32.25	23.16	35,717
10.86	0.22	0.31	1.61						
38.1	0.8	1.1	5.6						
449,549	19,001	34,347	40,248	2,572,795	72.11	1,216.80	42.55	33.65	35,679
12.60	0.53	0.96	1.13						
41.2	1.7	3.1	3.7						
524,977	.....	20,172	26,155	2,398,673	67.80	952.82	39.80	30.05	35,379
14.84	.....	0.57	0.74						
47.2	.....	1.8	2.4						
265,969	6,176	7,888	12,920	2,866,219	81.07	1,225.34	22.53	17.87	35,357
7.52	0.17	0.22	0.37						
39.6	0.9	1.2	1.9						
488,973	6,500	600	35,045	2,119,911	60.08	858.13	35.45	26.16	35,284
13.86	0.18	0.02	0.99						
47.9	0.6	0.1	3.4						
422,766	27,843	75,026	82,373	1,415,001	40.44	1,396.04	43.84	39.46	34,987
12.08	0.80	2.14	2.35						
34.1	2.2	6.0	6.6						
332,578	3,493	8,158	37,133	958,969	27.53	699.81	23.20	19.22	34,836
9.55	0.10	0.23	1.07						
56.5	0.6	1.4	6.3						
210,774	6,677	8,236	21,817	1,437,000	41.71	914.13	29.25	20.70	34,456
6.12	0.19	0.24	0.63						
31.2	1.0	1.2	3.2						
478,671	18,655	51,835	24,950	2,658,750	77.54	1,603.17	42.77	31.81	34,290
13.96	0.54	1.51	0.73						
48.4	1.9	5.2	2.5						
534,158	11,008	26,830	29,496	1,115,700	33.27	1,361.26	42.05	33.91	33,535
15.93	0.33	0.80	0.88						
51.2	1.1	2.6	2.8						
396,830	10,872	18,097	7,916	428,305	12.79	359.37	31.04	24.66	33,476
11.85	0.32	0.54	0.24						
52.8	1.4	2.4	1.1						
494,463	26,060	48,480	43,000	1,664,000	50.09	1,464.54	43.08	33.54	33,217
14.89	0.78	1.46	1.29						
43.5	2.3	4.3	3.8						
377,220	14,260	24,224	13,823	1,132,634	34.36	433.05	36.20	27.45	32,966
11.44	0.43	0.73	0.42						
54.4	2.1	3.5	2.0						
458,405	13,499	23,996	41,473	3,153,662	96.40	1,344.66	47.59	35.83	32,715
14.01	0.41	0.73	1.27						
42.1	1.2	2.2	3.8						
418,192	12,725	21,943	20,965	2,380,945	74.40	972.58	41.00	29.87	32,002
13.07	0.40	0.69	0.66						
50.4	1.5	2.6	2.5						
467,693	21,000	38,300	44,722	1,421,000	46.71	1,565.02	41.77	33.85	[1]30,421
15.37	0.69	1.26	1.47						
49.2	2.2	4.0	4.7						
389,200	6,446	26,700	36,653	1,120,185	36.83	970.43	30.95	24.65	30,419
12.79	0.21	0.88	1.20						
41.0	0.7	2.8	3.9						
317,574	.....	34,856	24,727	2,812,311	92.51	1,770.51	32.35	24.93	30,400
10.45	.....	1.15	0.81						
34.1	.....	3.7	2.7						
629,842	13,371	88,425	17,344	5,251,778	174.45	1,364.37	56.04	39.22	[1]30,105
20.92	0.44	2.94	0.58						
57.3	1.2	8.0	1.6						

[1] Population as of Jan. 1, 1920.

The Census Bureau's Classification

showing the various municipal activities and service included under the various classifications in the foregoing table will be found in THE MUNICIPAL INDEX *for 1927, page 104. Averages of total, per capita, and percentage expenditures for the main subdivisions of governmental-cost payments of the five groups of cities are given on page 97 of the same volume.*



COPY OF INDEX MAP PREPARED BY FAIRCHILD AERIAL SURVEY, INC.
Each inked rectangle represents the exact area covered by the corresponding aerial photograph

Aerial Surveying as Applied to Tax Equalization

By Charles M. Emerson

ALERT municipal officials recognize tax equalization as one of their most important problems. Their first step towards its solution often reveals a dearth of reliable and up-to-date tax maps, as well as an incubus in the form of an obsolete system of assessment which arbitrarily forbids the equal apportionment of the tax load because of lack of detailed information.

The first requisite for comprehensive, intelligent tax equalization is the possession of accurate and detailed maps. The financial condition of the smaller municipalities in the United States has, up to the present time, precluded the securing of proper maps, on account of the high cost of survey. Prohibitive cost of adequate maps no longer exists, because of the development of aerial surveying.

After reading the figures given below, many an official will be likely to say, "That may have happened in those cities, but it would not be possible in mine." Similar expressions were made, with many variations, before the Middletown reappraisal, but the municipal executives, assessors, and leading manufacturers had the vision to determine the need, and the courage to apply the remedy. The good results exceeded their expectations.

Manufacturing plants take a careful inventory of stock and tangible assets each year, while comparatively few municipalities in the United States know what their property assets are or have anything approaching an equable assessment of property parcels. This is not the fault of the personnel of the board of assessors, for almost invariably the members of the board are chosen from the most competent citizens of the municipality. The fault lies in the obsolete

systems employed. Most assessors are paid a mere pittance and are asked to perform one of the most important pieces of work in the community. They are naturally forced to follow other means of livelihood, and, as a result, when their municipal work is at its peak, the system sometimes brings about a condition that allows citizens to approach the assessor's desk and list their own property valuation as they see fit.

The mental protest of most citizens upon payment of their taxes is due not so much to the amount of money involved, as to a conscious or subconscious belief that their neighbors are not bearing their just proportion of the tax burden—not for any reasons of dishonesty, but from the inefficiency of the system.

The structure of municipal growth, financial standing, and bonding capacity of every municipality is reared upon the foundations of its assessment list and its tax rate in the ratio which they express. An extortionate rate, coupled with a low, unequalized assessment list, tends not only to produce a pessimistic and disgruntled taxpayer, but also to discourage the future taxpayer, whether he is in the market for a home or for a factory or mercantile site. The cost of municipal government is constantly increasing, and in many instances municipal departments are being forced to curtail or to postpone indefinitely necessary improvements, owing to lack of revenue. If such a state of affairs continues, it places the city in the rear of the more progressive cities, with a resultant decline in real estate values which makes the regeneration of the city doubly hard.

A properly balanced and just reassessment is the only escape for those municipalities in which an exorbitant tax rate exists and in which the debt burden has approached or exceeded the legal limit. An aerial survey is the first step. The illustrations show typical sections of aerial photographic maps. What are their advantages and what is the difference in cost?

In order to present a true comparison of costs and methods, a statement was requested from the appraisal engineer, Edward A. McCarthy, President of The Municipal Service Company of New Britain, Conn., who, as an expert, has employed both methods in his municipal appraisal work. He says:

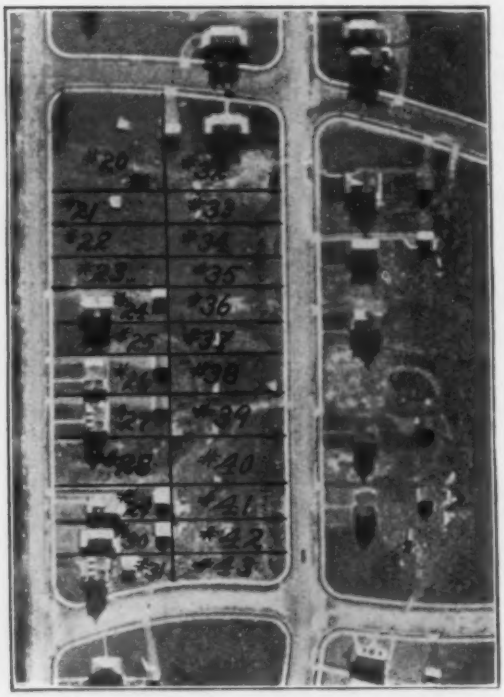
"The first municipality ever reappraised in which aerial photographic maps were used is, to the best of our knowledge, that of Middletown, Conn. Let us compare the two cities of New Britain and Middletown in regard to mapping time and costs.

"Old survey method: New Britain, area, 13 square miles; time required to secure maps, four years; cost, $48,000. Aerial method: Middletown, area, 42 square miles; time required to secure maps, 60 days; cost $4,000.

"The aerial maps gave the entire municipality in 100 per cent detail, showing every building, tree, curbstone, and stone wall to scale. The quick delivery of aerial maps of Middletown enabled us to get reappraisal work started in record time. At the end of fourteen months the following startling figures were made public in the *Middletown Press* of February 27, 1925, as the result of our appraisal methods: '1,896 pieces of city property were omitted from the old assessment lists.'

"On Main Street, out of 248 stores, 49 were omitted from the lists. Last year 146 of this

TYPICAL SECTION OF CONTACT PRINT AS USED IN FIELD WORK
Note how the physical and cultural features of the terrain aid in superimposing property boundaries, thus reducing deed research to a minimum



SECTION OF ENLARGED AERIAL PHOTOGRAPHIC TAX MAP, SHOWING METHOD OF LOCATING PROPERTY PARCELS

number put their stock and fixtures in as worth $405,000. We visited them and proved that the reappraisal was a just distribution of the tax load, upon which they individually and *voluntarily* increased their valuations from 50 per cent to 700 per cent, raising the total from $405,000 to $835,000.

"In the past two years four Connecticut municipalities have been reappraised by the Municipal Service System in conjunction with the Fairchild Aerial Survey, with the following resultant earnings:

City or Town	Assessment List Raised From	To	Tax Rate Lowered From	To
Middletown	$20,500,000	$31,500,000	30 mills	24 mills
Manchester	35,000,000	52,000,000	18 "	13 "
East Haven	6,900,000	13,170,000	28½ "	15 "
Berlin	3,900,000	7,640,000	25 "	15 "

"In Middletown a new school and a fire-house were added to the budget, as well as a sinking-fund of $20,000 per year to retire $600,000 worth of railroad bonds. In Manchester a new town hall was added to the budget. In East Haven the budget was increased by the addition of a new school. The Berlin budget was increased by larger road appropriations. All these municipalities had been trying to build roads, schools, fire-houses, etc., but could not do so because the taxpayers would not allow the rate to go any higher under the old system of assessing. It may be readily seen from the foregoing that in each case the city or town was soundly financed, its bonding capacity increased, the grand list raised, the tax rate lowered and this accomplished in spite of an increased budget.

"Aerial mapping as applied to tax reappraisal has proved its case, and at the end of the first year the city or township finds itself thoroughly inventoried, soundly financed, well equipped with maps, and in possession of complete data with which to enter the next logical step of zoning."

In an open letter received since the reappraisal, John L. Roth, Tax Commissioner of Middletown says:

"We have just completed a reappraisal of all property located in our city, which covers an area of approximately 42 square miles. Many miles of this is woodland and hilly, making it very inaccessible for land surveyors. The aerial maps were a great help in locating boundaries and classifying lands, showing cultivated, wooded, swamp, etc.

"A great saving was effected in time and money by using these aerial maps. Our engineers tell us that the saving, in comparison with a land survey, was approximately four-fifths of the cost and an inestimable saving of time."

The mapping material delivered to the municipality consists of the following items:

1. An index map, to be used to expedite the selection of the correct contact print or enlargement covering a particular area. This shows the exact area covered by each exposure.

2. A set of contact prints 7½ x 9½ inches, printed from the full set of negatives and to be used in marking property boundary lines in field work.

3. A set of enlargements at a scale of 1 inch equals 200 feet, to serve as assessment block maps for outlying areas. Upon these enlargements added data will record farm boundaries, and indicate the ownership of all lands outside of the congested districts. The detailed information in regard to each tract to be recorded on tax file cards prepared by the appraiser.

4. A set of enlargements at a scale of 1 inch equals 50 feet of the congested city areas, to be used as above for tax block maps.

With such maps and enlargements, every factor which bears upon the problem of valuation can be readily discerned and interpreted by anyone. Each citizen can check his valuation with his neighbor's, and the records prove the ratio of equalization.

There is hardly a municipality or county in the United States where property values have not changed so rapidly in the last few years as to make many present assessments unjust. It may be safely stated that any municipality which couples the aerial survey with a just tax reappraisal will be able to recoup all costs and salaries incidental to the work within two years as a maximum, in addition to finding that it is more soundly and honestly financed than heretofore.

A Forward-Looking Court Decision on Grade-Crossing Elimination

An editorial from The World, New York, March 21, 1927

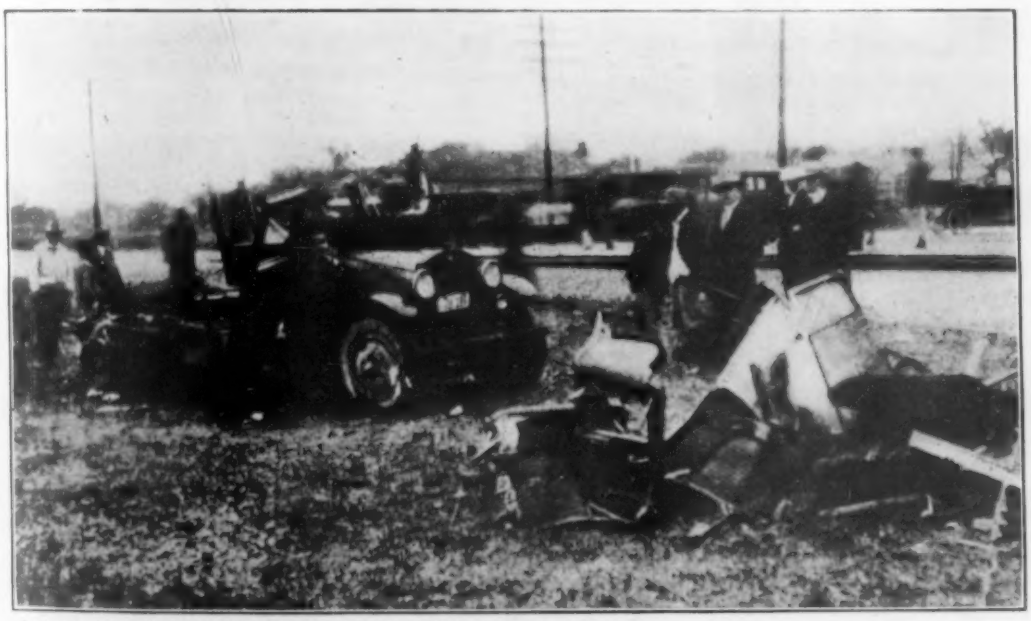
IN affirming the right of the Transit Commission to order a railway company to eliminate a grade crossing, the Appellate Division of the Supreme Court of New York has thrown its influence and authority on the side of human safety as against the interest of property. The objections raised by the company against the Commission's orders were of a familiar sort. It was contended that the orders violated the Constitution in that they took away property without due process of law, that to comply with them might force the carrier into bankruptcy, and that the small number of accidents at the crossings in question showed the orders to be unnecessary.

Each of these objections was overruled. The question of constitutionality was disposed of by reference to the opinion of the Supreme Court of the United States in a similar case, in which it was held that consideration of safety took precedence over the question of possible bankruptcy or interference with interstate commerce. Concerning the absence of accidents at a particular crossing the Court said that "it surely is not necessary to await a serious disaster, always possible, especially when there is considerable use of a crossing." In summing up, the Court pointed out that the requirements for public safety are quite different now from what they were a quarter of a century ago, and added, "The law should and does recognize that the value of human life is of more importance than the dollar."

With the seal of judicial approval thus formally placed upon its program, the state is now in a position to carry through its task of making motor travel on the public highways less dangerous to life and limb.

A Grade-Crossing Crash in Which Ten Students Died

Today engineering skill makes possible the transmission of this photograph by telephone. Some day engineering skill and enlightened statesmanship will make impossible such catastrophies as the picture shows.



P & H Photos (sent to New York by telephone from Chicago)
THIS IS ALL THAT REMAINED OF A BUS CARRYING THE BAYLOR UNIVERSITY BASKETBALL TEAM, AFTER A TRAIN STRUCK IT AT ROUND ROCK, TEXAS. TEN STUDENTS WERE KILLED, AND FIVE OTHERS WERE INJURED

Another Year's Damage by Autos

Connecticut's Record for 1926 Shows a Decrease in Fatalities, But an Increase in Injuries and Property Damage

THE year 1926 shows for the first time a decrease over the previous year in the number of persons killed by automobiles in the state of Connecticut. This satisfactory showing is offset, however, by a substantial increase in the number of persons injured. A four-year comparison is given by Ethel Usher, Statistician, in Bulletin No. 40, The State Department of Motor Vehicles:

	1923	1924	1925	1926
Accidents ...	16,500	20,781	22,568	24,326
Persons killed.	280	302	354	332
Persons injured	4,879	7,158	7,992	9,802
Damage to property	$1,650,000	$1,878,000	$2,130,877	$2,391,846

In making a comparison of these figures with those of other states, it should be borne in mind that Connecticut's requirements are exceptionally severe, in that every accident resulting in personal injury or fatality or property damage where the estimated damage is valued at more than $10 must be reported. An analysis of the causes of motor vehicle accidents in the state during the last two years shows the following comparison; figures in bold face type indicating improvement in 1926 over 1925:

RECKLESSNESS OF OPERATOR

Causes of Motor Vehicle Accidents in Connecticut	Number of Accidents 1925	1926
	1925	1926
Inattention	5,426	**6,240**
Failure to grant right of way	3,465	**3,644**
Skidding	1,875	**2,339**
Driving on wrong side of road	1,117	**1,009**
Operating too fast for conditions	1,054	**745**
Careless backing	712	906
Inexperience	708	**429**
Failure to signal	621	**452**
Intoxication	358	393
Following too closely	254	520
Cutting corners	217	**88**
Improper parking	209	**177**
Cutting in	182	**126**
Passing on wrong side of vehicle	49	**38**
Confusion	45	67
Passing standing trolley	31	40
Passing on curve	28	**18**
Passing on a hill	27	**19**
Trying to beat train	0	2
Passing at intersection	..	18
Operating too slowly for conditions	..	4
	16,378	17,274

For several years this group of causes has remained by far the largest, and it shows no downward trend yet. "Inattention" and "Failure to grant right of way" remain the most frequent forms of carelessness. In only three forms, "Driving on wrong side of road," "Cutting in," "and "Passing on wrong side of vehicle," has the improvement been maintained for two years. In the others, if there was any gain in 1925, it has been lost in 1926.

CARELESSNESS OF CHILD PEDESTRIAN

	1925	1926
Crossing street inattentively	878	868
Stepping from behind objects before looking	464	451
Playing in street	82	95
Coasting	66	97
Stealing ride	43	40
Confusion	16	12
Boarding or leaving trolley car	7	6
	1,556	1,569

There has been apparently a more extensive teaching of safety to children, for the proportion of children killed and injured has reduced and the increase in the number of accidents caused by their carelessness is negligible. The small increase is entirely in the two forms, "Playing in street," and "Coasting," all of which may be due to the unusually good coasting conditions in 1926.

CARLESSNESS OF ADULT PEDESTRIAN

	1925	1926
Crossing street inattentively	746	733
Stepping from behind objects before looking	178	226
Intoxication	87	104
Confusion	55	59
Boarding or leaving trolley car	24	28
	1,090	1,159

The adult pedestrian is losing the gain made in 1925, his record being worse in every respect except in "Crossing streets inattentively," where he has continued to improve slightly.

CARELESSNESS OF CONTRIBUTOR

	1925	1926
Motorman	546	694
Unknown operator	527	582
Animal	402	**360**
Bicyclist	319	**251**
Teamster	151	160
Gateman or flagman	20	**13**
Man working on road	10	12
Man with push-cart	3	11
	1,987	2,083

The "Unknown Operator," or hit-and-run driver, and the trolley car motorman continue to lead in this class. The "Bicyclist" and "Railroad Gateman or Flagman" have shown greater vigilance apparently. Animals are becoming more and more proficient, causing fewer accidents each year.

CARELESSNESS OF PASSENGER

	1925	1926
Jumping on or off moving vehicle	30	44
Interference with operation	17	11
Miscellaneous	35	31
	82	86

This group is a very small factor, which may indicate that the so-called back-seat driver is responsible for fewer accidents than jokes.

DEFECTIVE EQUIPMENT

	1925	1926
Steering apparatus	169	158
Brakes	109	137

Obscured vision	101	147
Blowout	89	114
Insufficient light	74	63
Glaring headlights	88	34
Miscellaneous	214	141
	844	794

As a whole, this group has maintained its previous record of improvement. Certain parts, such as brakes, windshields, and side and back windows, have not been kept in good condition always, but it would appear that lights, either glaring or insufficient, continue to be less a menace than an annoyance.

MISCELLANEOUS

	1925	1926
Weather conditions	154	69
Road obstruction	73	63
Defective highway	49	75
Ignition of gas	29	35
Overloading	7	3
Unprotected railroad crossing	6	12
	317	257

Only about one per cent of all of the accidents are represented here, and comment seems unnecessary except that mention might be made of the fact that fewer accidents are charged to "Weather conditions." Operators are evidently learning how to take them into account.

Needless Handicaps to Police Regulation of Traffic

A LIST of preventable handicaps to effective traffic regulation by the police, as contrasted with obstacles which will always be present in some degree, was presented at the 13th Annual Michigan Conference on Highway Engineering, at the University of Michigan, February 18, 1927, by G. C. Schink, Director of Traffic, Detroit Police Department. Mr. Schink's list follows:

1. Too many minor traffic regulations.
2. Discouragement encountered when having our traffic violation cases disposed of in the courts.
3. Delay in the adoption of a model state code of uniform traffic regulations.
4. Lack of laws permitting the proper control and regulation of the movements of pedestrians.
5. Time wasted by well-meaning officials, citizens, and organizations in ill-considered or unstudied minor experiments in widely scattered localities or in isolated sections of cities and counties.
6. Failure to be given the necessary cooperation of the business interests of our communities.
7. The crying need of more propaganda or educational efforts carried on through wide use of the printed word and through speakers.
8. The to-be-deplored indifference of the daily newspapers displayed toward the alarming growth of the traffic threat in our streets.
9. The flagrant abuse of parking privileges by the individual motor-car driver.
10. The failure of manufacturers, merchants, office building owners, and apartment house owners to make any suitable provision—in fact, any provision—for the parking of the motor vehicles of their patrons, customers, or tenants.
11. The amazing failure of parents to join with the efforts of the traffic police to safeguard little children—their children—by implanting lessons of safety in the receptive minds of the coming generation.

In commenting on these eleven handicaps, Director Schink pointed out that they are entirely needless, because those to be held responsible are beginning to realize that conditions have changed—have become dangerous.

He did not include in his list of handicaps any reference to the selfish driver. "We can hope for the end of the handicaps. We of the police, though changed conditions in the future may bring us to the hour when we can feel elated over our success in coping with the traffic safety problem, will, I believe, never become optimistic enough to look for the passing of the selfish driver—this one label blanketing the drunkard at the steering wheel, the reckless crippled-wit, the speeder, and the road hog. These obstacles, not handicaps, we shall have with us so long as motor cars whir over paved stretches."

The police have the right to expect wider support in their task of discouraging the self-centered individuals who, indifferent to the rights or welfare of others, go on as the most formidable obstacle to police traffic regulation.

Municipal Forest Pays All Running Expenses of German Town

IN a copyrighted wireless dispatch of February 15, from Heitersberg, Palatinate, *The New York Times* says:

"Inhabitants of this town are now convinced that there is something in its name. 'Heitersberg' means 'hilarity town,' though the explanation was given in a cynical tone during the past three years due to the tax collectors having carried away a large part of the people's earnings.

"Today the Mayor announced that all taxes on property and business levied in the past three years will be remitted, since the municipality owns forests producing sufficient funds to meet all expenses, including numerous proposed improvements.

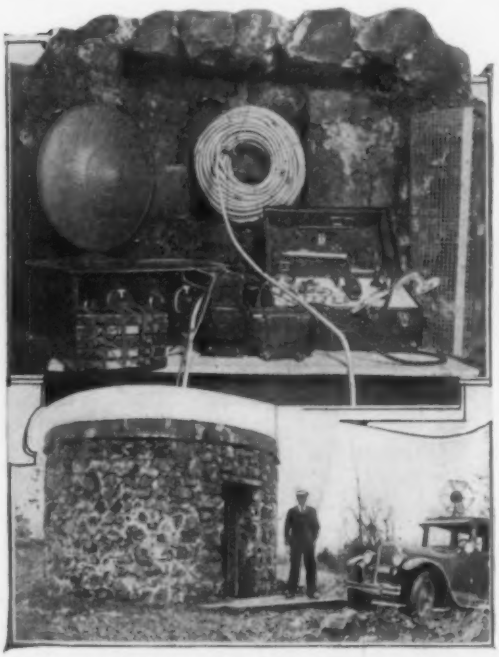
"Heitersberg is considered the richest town in the German Reich."

Policing a City's Air Waves

By M. Norris Davis

IN Portland, Ore., the city fathers are helping to make that municipality a radio heaven for air-wave fans. Their recent action in passing an ordinance (with emergency clause) which provides for the minimizing of radio interference, has shown that the governing body is doing its share towards making the air safe for radio listeners.

One of the pioneers in forming a Broadcast Listeners' Association, Portland has at the present time one of the most progressive clubs of this kind in the United States. Its president this year is the city's Mayor, George L. Baker, and among the other officers and directors for 1927 are John M. Mann, Commissioner of Public Utilities; Frank S. Grant, City Attorney; and L. W. Going, Chief Electrical Inspector of the city.



Courtesy of *The Morning Oregonian*

SCENE OF INVESTIGATIONS OF TECHNICAL COMMITTEE BROADCAST LISTENERS' ASSOCIATION

The interior of the "dungeon" shows a five-tube frequency radio receiver, used in checking up on receiving conditions; also a violet-ray machine with auxiliary apparatus which was used in determining the extent of interference emanating from such therapeutic equipment. The latter was proved "guilty" and by way of "sentence" Portland's radio ordinance was formulated and passed. The exterior of the committee's experiment station shows its small dimensions. A heavy brass padlock prevents intrusion by the curious, and the tiny building is securely anchored against the elements. At the right is shown one of the service cars which each of Portland's electric power companies maintains. These cars are part of the equipment that enables the technical committee to trace to their source interference from power leaks, transformer noises and all other allied disturbances

The Association takes care of all complaints and inquiries of listeners or workers in the radio field, as to reception, installation of equipment or set operation. The appointing and work of the organization's technical committee has been of vital importance, and will be explained later. A magazine, *Northwest Radio Listener*, published semi-monthly, furnishes complete programs of forthcoming broadcasting from the western stations, and is filled with information of interest to radio fans. While subscriptions to this magazine are accepted, it is furnished gratis to members of the Association who have paid the initiation fee of 50 cents and the annual dues of $1. Practically all money received by the Association is used in technical investigations and affiliated work; the cost of maintenance at headquarters is negligible, partly due to the fact that so many of the workers are giving their time without pay.

The technical committee carries on its investigations in a deserted water-tank at the top of Council Crest, in Portland. It was here that it was proved that as much as 75 per cent of local radio disturbances could be traced to electrical therapeutic apparatus. A measure for the relief of listeners was drawn up and presented to the City Council, but was tabled for certain revisions that in reality broadened its scope and effectiveness. When the ordinance was finally passed, in January, 1927, the salient provisions covered not only such radio-frequency radiating equipment as violet ray, X-ray and other therepeutic apparatus generating electrical radiations, but also amateur stations that transmit broadly tuned waves and key clicks that are impressed on the broadcast listener's receiver.

Portland is believed to be the first city to pass such a radio ordinance, and it has aroused so much interest throughout the country that the mail received by the Association has grown to huge proportions. "What does your ordinance contain, and how may we go about obtaining similar relief?" ask other troubled municipalities. For the information of such, the ordinance is given in full below:

Ordinance 51269

An ordinance to provide for minimizing radio interferences, providing a penalty, and declaring an emergency.

The city of Portland does ordain as follows:

Section 1. *Unlawful to operate apparatus that interferes with radio broadcasting or reception.*—It shall be unlawful for any person to operate in the city of Portland any apparatus generating or causing high-frequency oscillations which interfere with radio broadcast transmitting or receiving apparatus, without a permit to use the same.

Section 2. *Definition of terms.*—The following electrical apparatus shall be considered as coming within the meaning of this ordinance, namely, violet ray machines, machines using the Tesla coil or principle, X-ray machines, open or quenched spark machines, or any machines including or incorporating a device producing high-frequency oscillations.

Section 3. *Application for and issuance of permit.*—Any person desiring to operate any apparatus in the city of Portland coming within the terms of this ordinance shall file a written application therefor with the Bureau of Buildings (Electrical Division). The Bureau of Buildings (Electrical Division) shall prepare a form of application. If the information in the application be indefinite or incomplete, the Bureau of Buildings (Electrical Division) shall refuse to issue a permit until sufficient information shall have been submitted. If an application be rejected, the applicant, upon request, shall be entitled to receive a definite statement in writing setting forth the reasons for the rejection. If the application conforms to the provisions of this ordinance and to the form prepared by the said bureau, a permit shall be issued to the applicant, conditioned that all requirements of the building code, fire code and other ordinances of the city of Portland have been complied with. Each applicant to whom a permit is granted shall pay a fee of $1 for one machine and 50 cents for each additional machine. It shall be unlawful to operate any apparatus permitted under the terms of this ordinance, and for which a permit has been issued between 7 o'clock P. M. and 11 o'clock P. M. of any day, unless the operation be by a practitioner duly licensed by the state of Oregon, or under his or her direction in the regular course of practice of his or her profession in emergency cases.

Section 4. *Permit personal—not transferable; expiring on the 31st day of December of each year.*—Each permit shall be personal and not transferable. All permits shall expire on the 31st day of December of each year.

Section 5. *Right of inspection—unlawful to interfere with.*—The inspector of buildings (Electrical Division), or any of his authorized deputies or assistants, shall have the right to enter upon any premises at all reasonable hours for the purpose of inspecting the installation and the working of all apparatus coming within the terms of this ordinance, and it shall be unlawful for any person to interfere with the inspector of buildings (Electrical Division) or any of his authorized deputies or assistants in making said inspection, or to refuse to permit the said inspector or his deputies or assistants to enter the premises for such purposes. The inspector or his deputies or assistants before entering any premises shall exhibit to any person there in charge his authority as inspector.

Section 6. *Permit subject to revocation.*—All permits shall be subject to further regulations that may be imposed by the council, and nothing in this ordinance contained shall be construed to create any vested right in any person to the assignment, renewal, reissuance or continuance of any permit, and the right shall be and remain at all times vested in the council, and the council may as hereinafter provided revoke and cancel any permit for fraud or misrepresentation in its procurement; or for a violation of any of the provisions of this ordinance, or any other ordinance of the city, or for a violation of any state or Federal statute, or for any conduct or act on the part of the person to whom the permit is issued, or the employes of such person, or permitted by him or them, on the premises where such apparatus is used, or in connection therewith, or adjacent thereto, tending to render such premises where the same is used a public nuisance, or a menace to the health, peace or general welfare of the city.

Section 7. *Notice and hearing.*—Whenever information shall come to the inspector of buildings, or to the chief of the Electrical Division that any person to whom a permit has been granted under the terms of this ordinance has committed any act rendering the permit subject to revocation, it shall be the duty of the officer having such information forthwith to submit the facts in writing to the council and at the same time serve upon the person to whom a permit has been granted a copy thereof, together with a notice citing such person to appear before the council for investigation of said complaint at a time and place stated in such notice. In case service cannot be had upon said person, the same shall be mailed to his last known business address. No further pleadings shall be necessary. Such hearing or investigation shall be informal. If on such hearing or investigation the council shall find that cause exists for the revocation of such permit, the same may be revoked by a majority vote of the council.

Section 8. Any person who violates any of the provisions of this ordinance shall, upon conviction thereof, be punished by a fine not exceeding $500 or by imprisonment in the city jail for a period not exceeding six months, or by both such fine and imprisonment.

Section 9. Inasmuch as this ordinance is necessary for the immediate preservation of the public health, peace and safety of the city of Portland in this, that there are no adequate regulations in the city on this subject, therefore an emergency is hereby declared to exist and this ordinance shall be in force and effect from and after its passage by the council.

Passed by the council January 12, 1927.

GEORGE L. BAKER,
Mayor of the City of Portland.

Attest: GEORGE R. FUNK,
Auditor of the City of Portland.

One point must be brought out—Portland officials state that there will be no attempt to exercise jurisdiction over receiving equipment, and it is the contention of the Association that this stand is correct. In other words, no attempt will be made to prohibit the use of regenerative radio receivers.

Of course, total elimination of therapeutic equipment of electrical nature would be impossible, and such is not the ambition of the Broadcast Listeners' technical committee. There are instances when an X-ray examination in a hospital or private laboratory may be the means of saving a human life or alleviating a suffering patient's pains. Such apparatus serves a definite purpose to humanity, and radio broadcasting could not sanely demand total freedom from medical disturbances.

Through the efforts of the Portland Broadcast Listeners' Association, aided by the active interest of the City Council, a new era has dawned for the radio fans of that city and vicinity.

Aims of the Modern Chamber of Commerce

It is the very essence of the American form of government that we shall have, as Lincoln phrased it, a government of and by the people. Our cities are not the result of governmental action in the narrow sense. They are the realization of planned efforts by the men and women who comprise them; who think out needed changes, within the city's financial capacity, and then put their shoulders to the wheel and strive together until success is attained.

The modern chamber of commerce has been developed to meet this need. It is a forum for public discussion, and for the crystallization of public sentiment. Its committees are investigative bodies which consider new proposals and then endeavor to "sell" to the entire membership those proposals which they think should be approved. This procedure, it seems to me, is the very essence of democracy. It insures all plans a fair hearing, and it increases the chance of success for all worthy public undertakings.

—From the presidential address of Martin A. Leese before the 1927 annual meeting of the Washington (D. C.) Chamber of Commerce.

Awards Announced in Inter-Chamber Fire Waste Contest

FOR the second consecutive year, the Albany, Ga., Chamber of Commerce has been awarded the grand prize in the Inter-Chamber Fire Waste Contest conducted by the National Fire Waste Council and the Insurance Department of the Chamber of Commerce of the United States. Other winners in their respective classes were the Milwaukee Association of Commerce, the Huntington, W. Va., Chamber of Commerce, and the Owensboro, Ky., Chamber of Commerce. The results of the 1926 competition were announced at a meeting of the National Fire Waste Council held in Washington on March 17 by the Board of Judges, consisting of President John W. O'Leary of the National Chamber, H. A. Smith, Chairman of the Insurance Advisory Committee of the National Chamber, George W. Booth, Chairman of the Contest Grading Committee of the National Fire Waste Council, Eugene Arms and Franklin H. Wentworth, members of the Grading Committee.

The accomplishments of the 1926 Contest surpass in every respect the contests of preceding years. Three hundred and three cities submitted reports, as compared with 221 during 1925, an increase of 37 per cent over the best previous record. The following table indicates the relative accomplishments of the 1925 and 1926 Contests:

	1926	1925
Percentage of cities reducing property loss	60.8%	56.4%
Percentage of cities reducing number of fires	28.5%	17.1%
Percentage of cities reducing fires exceeding $1,000 loss	48.5%	44.6%
Average per capita loss of cities reporting	$3.07	$3.77
Percentage decrease in per capita loss, as compared with average of preceding five years	15.0%	0.5%
Reduction in property loss	$4 146,282	*$6,331,100
Percentage decrease in number of persons killed	33.8%	7.0%
Percentage decrease in number of persons injured	1.15%	*0.7%

*Increase.

The honor cities in Class 1, cities of over 100,000 population in the 1926 Contest were as follows:

Philadelphia, Pa.	Indianapolis, Ind.
Portland, Ore.	Fort Worth, Texas
Rochester, N. Y.	Seattle, Wash.
Detroit, Mich.	Grand Rapids, Mich.
New Orleans, La.	Wilmington, Del.

In class 2, cities of 50,000 to 100,000 population, the honor cities were:

Pasadena, Calif.	Bethlehem, Pa.
New Britain, Conn.	Fresno, Calif.
Springfield, Ohio	St. Joseph, Mo.
Bay City, Mich.	Charleston, W. Va.
McKeesport, Pa.	Wichita, Kans.

Class 3 honor cities, comprising those between 20,000 and 50,000 population, were:

Yakima, Wash.	Butler, Pa.
Mansfield, Ohio	Baton Rouge, La.
Battle Creek, Mich.	Hagerstown, Md.
Petersburg, Va.	Lorain, Ohio
Uniontown, Pa.	Riverside, Calif.

In Class 4, cities of under 20,000 population, the following cities received honorable mention:

Billings, Mont.	Marlow, Okla.
Fullerton, Calif.	Pekin, Ill.
Laconia, N. H.	Fremont, Mich.
Oceanside, Calif.	Ardmore, Okla.
Weston, W. Va.	Blackwell, Okla.
Torrance, Calif.	

The National Fire Waste Council authorized the Board of Judges to give honorable mention for their states to those cities whose records, in the opinion of the Board, merited this distinction. The following cities were accordingly selected for this honor, all having made the best record in the contest in their states:

Alexander City, Ala.	Billings, Mont.
Fullerton, Calif.	Laconia, N. H.
New Britain, Conn.	Rochester, N. Y.
Wilmington, Del.	Mansfield, Ohio
Albany, Ga.	Tulsa, Okla.
Pekin, Ill.	Portland, Ore.
Indianapolis, Ind.	Philadelphia, Pa.
Winfield, Kans.	Memphis, Tenn.
Owensboro, Ky.	Fort Worth, Texas
New Orleans, La.	Burlington, Vt.
Hagerstown, Md.	Petersburg, Va.
North Adams, Mass.	Yakima, Wash.
Detroit, Mich.	Huntington, W. Va.
St. Paul, Minn.	Milwaukee, Wis.
St. Joseph, Mo.	Casper, Wyo.

New York Towns Get New Powers to Control Subdivision Platting

IT was announced on March 21 by the Regional Plan of New York and Its Environs that Governor Smith had signed the Thompson bill, giving to towns new powers in relations to official maps and planning boards.

"This is an important step forward," said Edward M. Bassett, Counsel for the Regional Plan, "for it rounds out the program of planning legislation initiated last year by the Regional Plan of New York and the Westchester County Planning Federation. Last year the powers of cities and villages were expanded to meet the problems created by uncontrolled subdivisions.* This new act confers similar powers on towns which are much more in need of them than the more closely built-up areas.

"The new laws, in short, authorize the establishment of an official map, provide that new plats may be required to fit harmoniously into such a map, authorize the planning board to require the reservation of suitable open space within the limits of the plat, forbid the granting of building permits for structures not related to mapped streets, and by authorizing the planning board to make variations in the zoning ordinance simultaneously with their approval of the plat thus place the authorities in a position to cooperate with the developer for the type of development that will best serve the community.

"The new laws are being employed by cities like Mount Vernon and Jamestown, and by villages such as Scarsdale, Tuckahoe, and Rye. Much interest in the Thompson bill has been manifested in the towns on Long Island where the subdivision problem has been acute, and it is confidently expected that many of these towns will avail themselves of the new law to assert control over their rapidly growing street systems."

* For the full text of the Act to Amend the General City Law, see THE AMERICAN CITY for June, 1926, pages 671-4.

Forward Steps

Reported by Municipal Officials, Chamber of Commerce Executives and Others

A City Plan and Profitable Public Utilities Stimulate Blackwell's Development

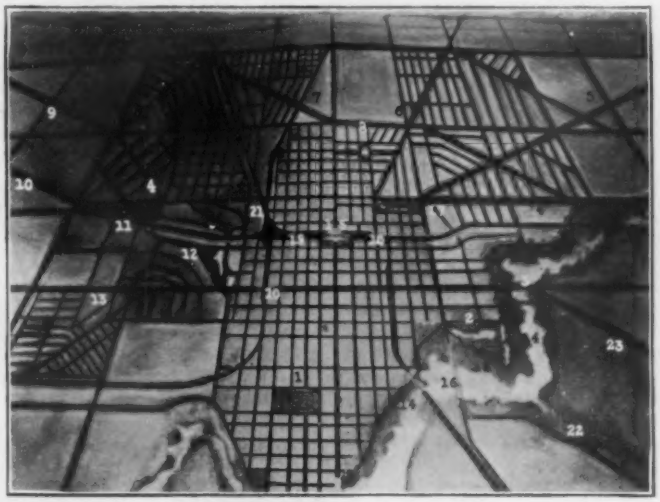
BLACKWELL, OKLA.—City planning for improved living conditions has marked the beginning of industrial expansion in Blackwell, the home of some of Oklahoma's important industries. In laying out the plan, provision has been made for the needs of the city for many years to come.

Like many communities in this section of the country, Blackwell, once the stronghold of the Otoes, Tonkawas and Osages, has a colorful history On the morning of September 17, 1893, following the opening of the Cherokee strip on the previous day, rugged land hunters were vying with each other as to how best to begin improving their new possessions. The population of Blackwell on that morning was estimated at 4,000.

In time the chaos of a tented city was turned into order and Blackwell began to build; many of the floaters moved on, and substantial citizens started to lay the foundations for the prosperous city of today. But the people had little with which to build and progress was slow, so that 1924 found Blackwell a city of only 7,137 population. In 1925, however, there was an increase of approximately 100 per cent, new industries having made their homes here, and with this expansion came an awakening to the need of orderly building to take the place of haphazard methods.

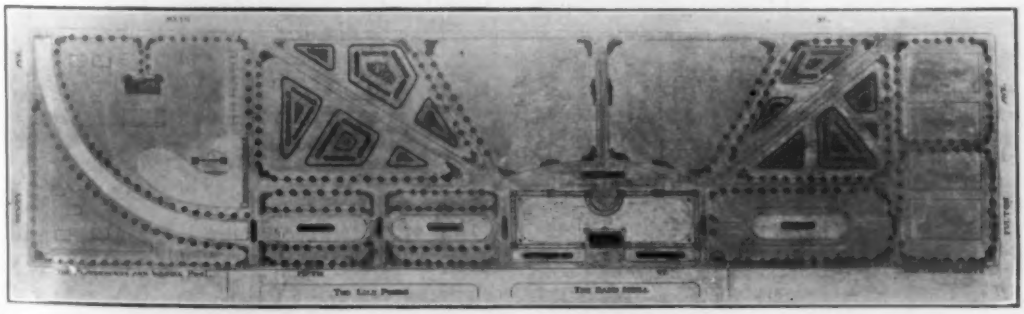
The question of a city plan was first proposed in a membership meeting of the Chamber of Commerce early in 1926, and a committee was named to investigate the results of city planning and zoning in other cities. Subsequently, upon the recommendation of the committee, John D. Seymour, Municipal Engineer of Tulsa, Okla., was employed by the City Commission of Blackwell to make a city planning survey. The result was the appointment of a City Plan Commission and the preparation of a zoning map which classified all buildings in the city and provided for future growth within a three-mile zone surrounding the city proper.

Fortunately, the zoning ordinance was drawn up



PLAN OF BLACKWELL, OKLA.

Nos. 1, 2, 11, and 12 are parks; 3 and 16, bridges; 4, 5, 6, 7, 9, 10, 13, and 23 are boulevards; 8, Waite Circle; 14, Riverside Drive; 15, Union Station and Blackwell Avenue subway; 17, 18, 19, 20, 21, other subways; 22, Bitter Creek Drive



PLAN OF AMERICAN LEGION MEMORIAL PARK, BLACKWELL, PROPOSED BY THE CITY PLAN COMMISSION

in time to affect the platting of a number of new real estate developments, and an attractive, well-planned city is now taking shape. Smokestacks are grouped in an industrial area that is provided with trackage facilities; multiple-family houses are restricted to those sections close to the business district and industrial sites; and storehouses, filling stations, and all commercial buildings are barred from the primary residence districts. A building code requires that a permit be procured before a structure is started, and the plans must conform to specifications laid down in the zoning ordinance for construction work in the particular zone in which the building is to be erected.

In the city planning scheme, the important problem of recreational facilities has not been overlooked. Three attractive parks have been provided and others are in process of development. One park is equipped with a large and commodious swimming pool, owned and operated by the city. Another, which has been dedicated to the American Legion, affords a site for a memorial building soon to be erected. The third is a large park with a beautiful riverside drive, still in the formative stage.

Before approving a plat for a new subdivision, the City Plan Commission makes every effort to secure the provision of a reasonable area for park, street, and alley purposes. Although lacking legal authority to compel such provisions, the Commission has accomplished a great deal through moral suasion. In these new developments contour lines are observed, insuring beautiful curved drives and boulevards that provide easy access to the downtown section as well as through by-passes to relieve traffic congestion in the business section.

That the adoption of a city plan has stimulated the building of homes is evidenced by the sale of lots in the three new additions platted under the present regulations. More than 1,500 lots have already been sold in these developments, and more than 100 homes are now under construction.

Street paving and the development of public utilities are keeping pace with the building of homes and business houses. A contract for paving Sixth Street, an important thoroughfare crossing the city from north to south, has been let, and bonds in the sum of $360,000 have been voted for the enlargement of the present water-works plant and the construction of a sewage disposal plant. Contracts for this work also have been let.

This city is proud to point out that its municipal water and light plant, notwithstanding its very low rate for water, light, and power, affords a revenue that is sufficient to take care of the maintenance of the plant, to make substantial improvements from year to year, and to pay the current expenses of the city government without the necessity of a tax levy. For instance, the total receipts of the plant for the year July 1, 1925, to June 30, 1926, amounted to $200,813.65, while the expenditures, including more than $80,000 for permanent improvements, totaled only $161,973.35. Small tax levies of from 3 to 6 mills have been required only twice in the last seven years, and these were for some specific purpose in each case.

One of the guiding hands in the growth of Blackwell from a small agricultural village to an industrial center has been the local Chamber of Commerce. This organization, founded early in the city's existence, has grown with the city and is now a recognized community center. Some of the large industries which have helped bring prosperity to this city, settled here as the result of the Chamber's efforts.

C. A. TUNNELL,
Executive Secretary, Chamber of Commerce.

A Town with Modern Fire-Alarm Apparatus in a Separate Building

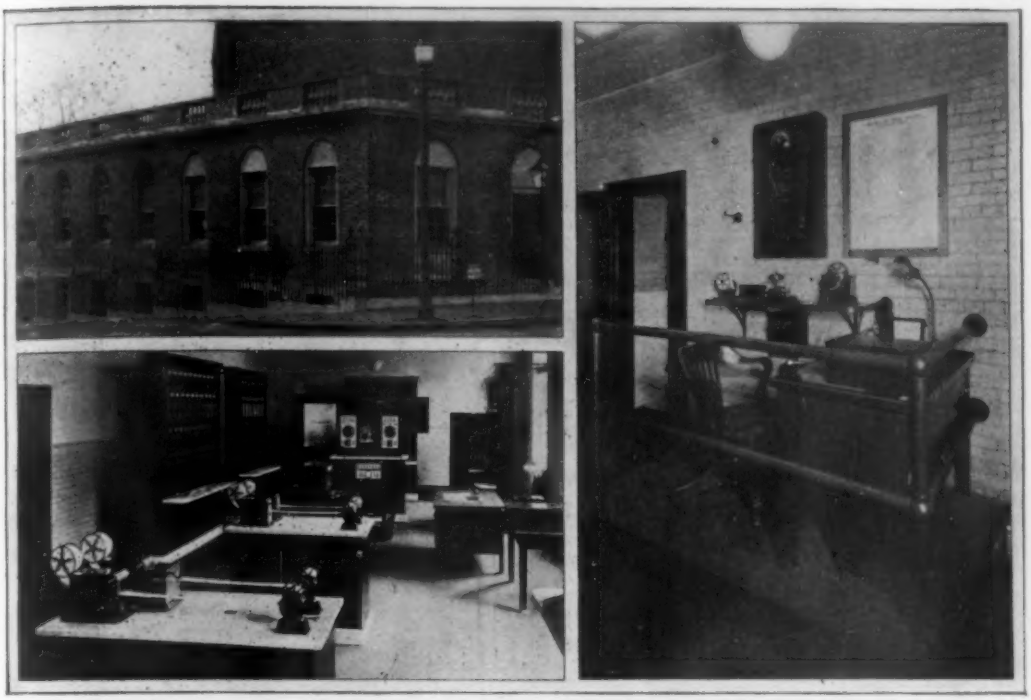
BROOKLINE, MASS.—Upon the completion of its new fire-alarm headquarters recently, Brookline gained the distinction of being the only municipality in the world having the town form of government with its central fire-alarm office equipment housed in a separate building. At the same time it gained the distinction of being the only town in the world having a semi-automatic system which under normal conditions is operated manually. The new system, replacing inadequate and antiquated apparatus, gives Brookline complete fire-alarm protection and also makes provisions for the growth of the town for many years to come.

The system not only includes the new Gamewell central office equipment, but also consists of the improved successive and non-interfering type of fire-boxes with quick-action doors. All that is necessary in sounding an alarm through this type of box is to pull down a small guard and then trip a lever which is visible through a bull's-eye in the guard.

The present system consists of ten box circuits over which alarms are received at the central station from the boxes on the street; four engine-house fast and four slow time circuits for the transmission of the primary and secondary alarms to the engine-houses and public alarm bell. The ten circuits have an ultimate capacity of 250 street boxes, with 105 now in use.

A unique problem was encountered in the laying-out of the system, which required very careful treatment. The town is principally a residential suburb settling in the outstretching arms of the city of Boston. The section nearest Boston is the most densely settled, the area beyond being sparsely populated by huge estates and several country clubs. The town, therefore, was divided into seven fire districts, with not an acre of ground left unnoticed. Underground lead-covered cables have been extended right to the boundaries of the town, and phantom boxes have been designated on the large private estates as a provision against the time when they shall be cut up and streets run through them. A number has been assigned to each of the fire zones in rotation, the lower numbers indicating the congested areas. In each zone the boxes have been laid out and numbered in rotation as far as physical conditions would permit. Thus, upon the sounding of an alarm the location of the fire is clearly evident to the firemen. For instance, if box number 141 were sounded, the first digit indicates the fire as being in zone one, and the digits that follow indicate the section of that zone and the street location.

This, of course, necessitated the renumbering of boxes, the locations of which must be memorized by every fireman in the department. Large box lists have been framed and placed in each of the engine-houses, and a large map, showing the zone



EXTERIOR OF THE NEW FIRE-ALARM HEADQUARTERS, BROOKLINE, MASS.; ALSO INTERIOR OF THE OPERATING ROOM, SHOWING GAMEWELL APPARATUS; AND AN ENGINE-HOUSE WATCH DESK, SHOWING RECORDING SET, TRAFFIC ALARM CONTROL, ETC.

layouts and the box-numbering scheme, will be placed in each of the engine-houses so as to facilitate the memorizing of box numbers and locations.

The central office, which might well be termed "the heart of the fire-alarm system," adjoins the fire headquarters. The apparatus housed in this building is of the latest Gamewell design. It consists of a ten-circuit box line relay board, two ten-circuit storage battery charging boards, one eight-circuit combination primary and secondary alarm board, one twenty-circuit protector board, one ten-circuit semi-automatic repeater, one New England style transmitter, one fast and slow time transformer, one box line recording set consisting of two five-circuit registers and two take-up reels; one primary and secondary recording set consisting of two four-circuit registers, two take-up reels and one time stamp; one self-winding master clock for controlling the time stamps; battery rack, 750 cells of F.I.P. battery, one motor generator set, control panel for the same. There is also a PBX telephone switchboard, with four trunk lines connecting all the engine-houses.

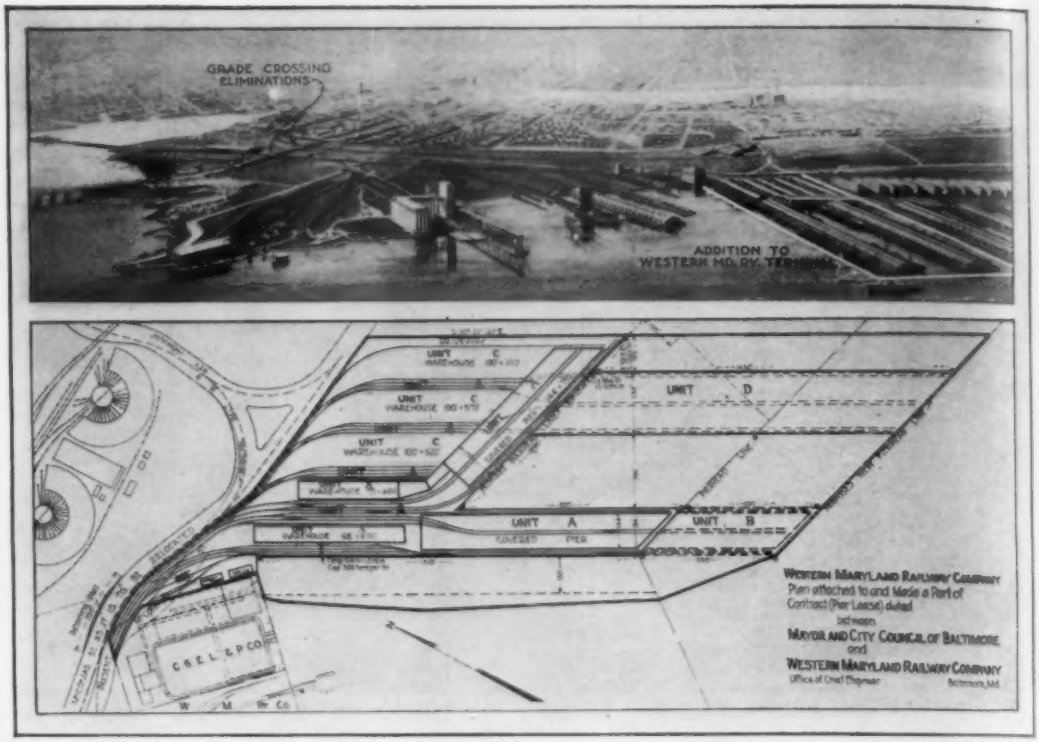
The signal installations in the engine-houses are especially worthy of comment. Each installation includes a recording set which consists of a register, a take-up reel, a quick-acting tapper; a slow-acting gong; an automatic electric light switch. This apparatus is mounted on a suitable shelf and panel; desk, chair, telephone and box index file are also provided for the man on watch. The desk and chair are mounted on a raised platform and enclosed by a metal railing.

The fire-alarm headquarters building is a striking example of economy combined with attractive architecture, as may be judged from the accompanying photograph. It is constructed of red antique water-struck brick with limestone trimmings. It is surrounded by an ornamental wrought iron fence, with a red lamp on one corner. The building is one story high, the dimensions being about 77 x 28 feet. In addition to the apparatus and the battery rooms, the interior provides quarters for the fire commissioner, secretary, and chief, at the front, and for toilets and showers in the rear. The roof is designed and equipped for a roof garden. Doorways have been cut through to the fire headquarters to provide passage. The entire building is of thorough fire-resistive construction. A mutual aid system has been set up with Boston, and the necessary apparatus is included for recording all Boston alarms in Brookline and vice versa. Connection will also be made with the Newton fire-alarm system as a protection against fires which might occur on the border.

SELDEN R. ALLEN,
Fire Chief.

$500,000 Fund to Finance the Fight on Fire

The most ambitious effort ever undertaken to demonstrate the possibility of reducing America's fire losses by scientific methods is being launched by a group of prominent business leaders throughout the country. A statement of the plan, which involves the raising of a fund of $500,000 to finance the fight on fire, was issued March 28 from the office of Irving T. Bush, President of the Bush Terminal Co. of New York, Chairman of the National Committee. Edward J. Mehren of the McGraw-Hill Publishing Co., New York, is National Vice-Chairman.



Combined Port Development and Grade-Crossing Elimination Project in Baltimore

BALTIMORE, MD.—The city of Baltimore has recently entered into a contract with the Western Maryland Railway Company, whose tidewater terminal is in Baltimore, by which the city is to provide for the Western Maryland a very substantial addition to the present terminal facilities of the Railway.

At the present time the Western Maryland has at this particular terminal, facilities which until recently were adequate, but the increase in the company's business has been so satisfactory and the prospects for the future are so promising that additional facilities will be installed as soon as possible, the actual work being started this spring.

The present facilities include two transfer bridges, an open pier 62 x 850 feet with four tracks, a covered merchandise pier 132 x 1,000 feet with tracks down the center of the pier and outside of the shed on the eastern apron, a coal pier and dumper with a capacity from yard to ship of 500 cars per day,—which will be increased to 1,000 cars per day when improvements are completed, about July 1, 1927,—a grain elevator with a storage capacity of 4,000,000 bushels and a loading capacity to ships of 2,880,000 bushels per day. Also, there are locomotive and car repair shops, as well as adequate roundhouse and yard facilities.

The accompanying picture shows a perspective of the existing facilities, together with those structures which will be built by the city. In the picture the new structures are surrounded on three sides by a white line.

The project includes when completed, a pier 186 feet wide by 1,450 feet long with pier shed, a pier 250 feet wide by 1,450 feet long with pier shed, a marginal wharf 610 feet long which will be equipped with a gantry crane capable of handling 500 tons of bulk cargo per hour, five large warehouses, a marginal wharf shed 144 by 710 feet, office building, shops, track scales, locomotive cranes, etc.

The construction that will be immediately undertaken will include the pier 186 feet wide, which will be only 900 feet long at the present time, a marginal wharf 1,000 feet long, supplied with a pier shed 144 by 710 feet and two warehouses, together with office buildings, shops, tracks, etc. It is from this 1,000-foot marginal wharf that the pier 250 feet wide will project when the later building operation is undertaken.

Those parts of the improvement marked "Unit A" in the accompanying plan will be built immediately. "Unit B" is a 550-foot extension of "Unit A" which cannot be built until the pierhead line is re-established by the War Department. "Unit C" comprises three warehouses, and "Unit D" the second pier.

The funds for this work are to be provided out of the $10,000,000 port development loan which has been authorized by the State Legislature and ratified by the voters of Baltimore. There is, in addition, $40,000,000 authorized by the Legislature, which may be ratified by the voters of Baltimore at any election. The lease to the Railway Company is for thirty years with the right of extending the lease ten years. The estimated cost of that part of this terminal improvement which will be undertaken immediately and shown as "Unit A" is $4,000,000.

Coincident with the terminal improvement of

the Western Maryland Railway Company will be the elimination of the grade crossings of both the Western Maryland and the Baltimore & Ohio on Hanover Street, an exceedingly busy thoroughfare leading to the bridge across the middle branch of the Patapsco River, the north end of which bridge is shown at the left of the picture.

F. W. McKINNEY,
Harbor Engineer.

A Progressive Village Fire Department

LINDENHURST, N. Y.—During the year 1926 the fire-fighting facilities of the village of Lindenhurst, Long Island, N. Y., have been greatly increased through the organization of three new fire companies and the purchase of additional up-to-date apparatus.

The new equipment included a hose wagon, a 50-gallon chemical tank, and a 750-gallon pumper, all of American-LaFrance manufacture. The chemical tank was built up by members of our Department. With these additions, we now have in service seven pieces of motorized apparatus. We are also equipped with an H. H. Inhalator, purchased from the Mine Safety Appliance Company, Pittsburgh, Pa. This type of inhalator was selected with the approval of the Village Health Officer and members of the medical staff of a nearby hospital, after due consideration of a number of types of similar apparatus.

We hope to receive the sanction of the Village Board for still further improvements of the Fire Department during the present year.

ROBERT W. WILD,
Chief Engineer, Lindenhurst Fire Department, Inc.

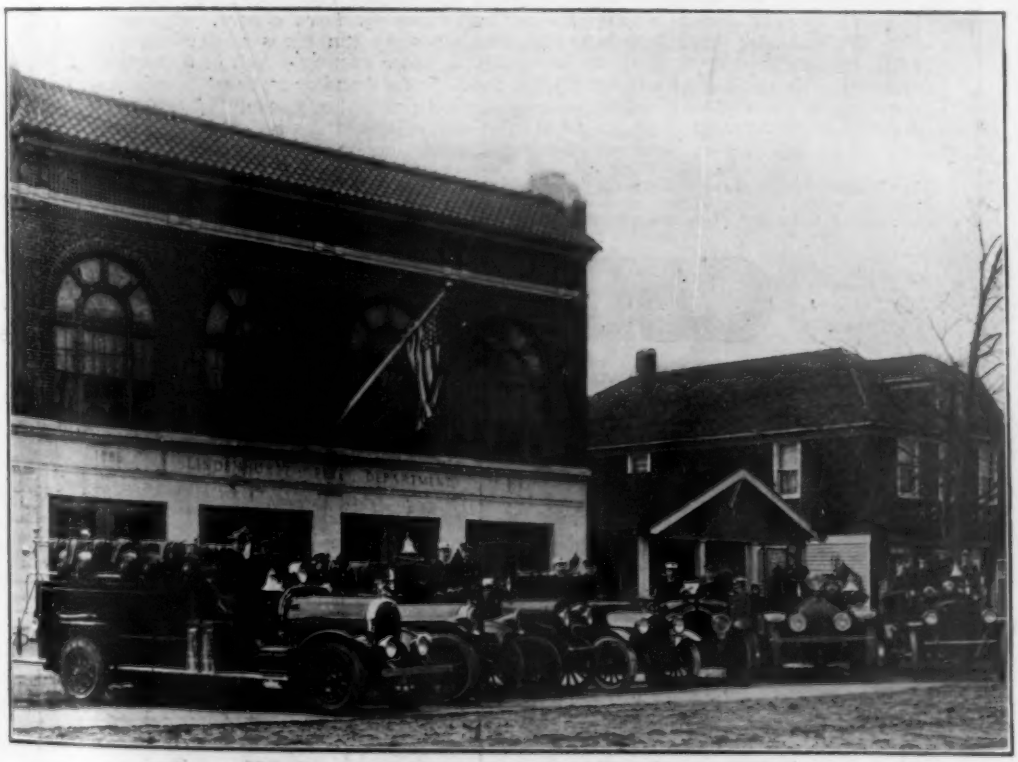
How San Francisco Is Revaluing Real Estate for More Equitable Taxation

SAN FRANCISCO, CALIF.—The Advisory Committee to the Board of Equalization of San Francisco, was created by the Board of Supervisors for the purpose of "making a scientific appraisal of the taxable real property of the city and county in order that the Board of Supervisors may perform the duties imposed by law upon said Board, as a Board of Equalization." The committee is empowered to hold public hearings for the purpose of ascertaining the true values of real property subject to taxation and to report the result of its investigation to the Assessor and to the Board of Equalization on or before July 1, 1927.

Budget Item No. 62 provided $50,000 to defray the cost, and on July 6, 1926, the Board of Supervisors authorized the employment of a superintendent and other experts and assistants, to carry on the work and fulfill the purpose of the first resolution.

In the appraisal work, modern analytic methods of realty valuation are being used, by which the following results can be obtained:

1. A basis for obtaining common judgment of land values
2. A uniform method of applying that judgment
3. A basis for comparing the value of one lot with another, one block with another, one street with another, and one district with another
4. Analysis of the factors entering into realty values



FIRE DEPARTMENT OFFICERS AND APPARATUS, LINDENHURST, N. Y.

Chief Wild is the seventh from the left

Beautiful Lawns Express Civic Pride

Well-kept lawns and parkways are a reliable index of an efficiently managed municipality. And experience has proved that *proper equipment* is an important factor in maintaining lawns and parkways in perfect condition.

To officials of cities and towns everywhere, "proper equipment" means the Coldwell Model "L" motor lawn mower and roller (*pictured above*). One man with this machine can mow and roll *simultaneously* ten acres a day—on *one* gallon of gasoline. With gang units attached it has a cutting swath of 60 inches. Beats everything as a general-utility mower. Saves hand trimming. Designed according to the Coldwell advanced engineering principles, Model "L" will perform dependably over a long period of time without repairs. Arrange now for a demonstration on your own grounds. Also send for descriptive literature.

The Coldwell Electric Lawn Mower (*pictured below*) is *as easy to operate as a vacuum cleaner.* Plugs in on any electric outlet. Nothing to do but steer it. Cuts a 21-inch swath. Just the machine for boulevard parkways. Booklet on request.

Hand — *Horse*

SINCE 1892

COLDWELL

Gasoline — *Electric*

DEPENDABLE LAWN MOWERS

COLDWELL LAWN MOWER CO., NEWBURGH, N. Y., U. S. A.

5. Comparative summary of appraised and assessed valuations

In this revaluation of real estate, the best available opinion of the entire city of San Francisco is being consulted in open public meetings. Relative values of the various blocks and street frontages in each district in the city will be carefully analyzed, and unit foot values established by committees of property owners, business men, real estate men, and others, working jointly with the superintendent and staff assistants of the Appraisal Bureau.

With basic street or block frontage values established, individual lot values will be computed through application of uniform mathematical rules and tables. These provide for the impartial distribution of the street (opportunity) values to the lots fronting on them, according to frontage, depth, shape and location at or near corners. Allowance for enhancing and depreciating influences of topographical conditions, etc., also will be made. A summary of lot valuations and a comparison with the 1926 assessment will complete the inventory.

Assessed land values will be at some level, uniform percentage of appraised values throughout the city, that percentage to be determined by the Assessor. Thus, the tax assessment using such a uniform percentage of the basic appraisal will be equitable, and assessed values equalized before the tax roll is written.

JAMES G. STAFFORD,
Superintendent, Bureau of Appraisal,

EDITORIAL NOTE.—This is the fifty-second city, town, or county in which Mr. Stafford has directed such revaluation work. Most of these are located in California and Arizona, the most notable being the City and County of Los Angeles, including thirty-two cities, towns and suburban centers and a vast agricultural area, the appraisal of which he supervised in 1915-16. THE AMERICAN CITY printed an article, with maps, in December, 1916, detailing the methods and results of this Los Angeles appraisal.

Constructive Work by the Live Wire Club of Binghamton

BINGHAMTON, N. Y.—The trend of modern chamber of commerce activities is toward the creation, in such organizations, of working groups for the purpose of handling specific tasks which are being placed in the Program of Work. In some communities, this is done entirely through special committees, while in others the standing committee ideal still predominates.

The Binghamton Chamber of Commerce has evolved a plan which is serving its purpose to a high degree. That plan is the combining of special committees in an organization known as the Live Wire Club. While the Live Wire Club idea is not a new one and exists in several chambers of commerce as a membership organization, the Live Wire Club in Binghamton has an entirely different purpose.

Membership is limited to 50, and the by-laws provide that a member missing four meetings during the year, with or without excuse, is automatically dropped from the Club. No dues are charged, the Chamber of Commerce providing the budget for the work of the Club.

The motto of the Club is, "No Member Shall Fail to Perform an Imposed Task." Activities cover a wide range. Most important is the creation of a city plan, the Club being divided into eight sub-committees — Agriculture, Industry, Commerce, Communication, Housing, Recreation, Government, and Publicity, each committee being entrusted with a certain phase of the city's growth. As these committees develop, their reports are brought to the Club as a whole, together with city maps, and this material receives the ratification of the entire Club, which carries through these projects with the city authorities and others in whose hands lies actual accomplishment.

In addition, the Club handles all the Chamber of Commerce meetings, making the arrangements, securing attendance, providing the entertainment program and all other details. During 1926, the Club handled such projects as: the election of Chamber of Commerce directors; the sponsoring of the opening day of the baseball season; securing additional sleeping-car service; industrial advertising; visits to various Binghamton factories; Triple Cities' Exposition of Progress; securing new members; "reselling" resigned or delinquent members; and many other activities too numerous to mention in detail. The Club meets on alternate Tuesdays of each month. No outside speakers are invited to address the organization, except on projects upon which it is actively at work.

The Club has one of the finest singing organizations in the city, as in its membership are song leaders of various service clubs and individuals who are exceptionally talented. The Live Wire Chorus, of 30 voices, is a popular entertainment group on all occasions.

The Club operates its affairs through three committees—Advisory, Program, and Membership. The Program Committee meets on alternate Tuesdays from the meeting date of the Club and arranges the program for the next three or four meetings, so that plenty of time is allowed for proper preparation. The Advisory Committee handles all matters of Club policy. The Membership Committee keeps a careful check on attendance and, when a member's interest appears to lapse, he is called upon by one of the members and asked whether he wishes to retain membership in the Club, and if not, whether he will send in his resignation. All new members proposed for the Club meet with the Membership Committee and are made thoroughly familiar with the Club policy, so that when they are admitted to membership they understand their relation to the Club and its activities.

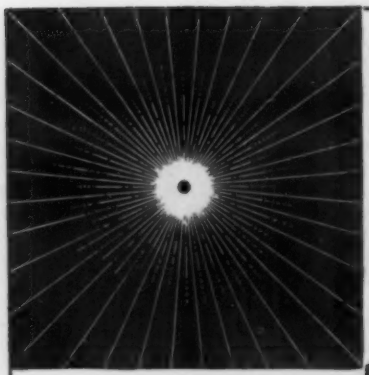
Altogether, the Live Wire Club is one of the most active groups in the Chamber of Commerce and is doing a very constructive piece of work.

J. B. WILES,
Manager, Binghamton Chamber of Commerce.

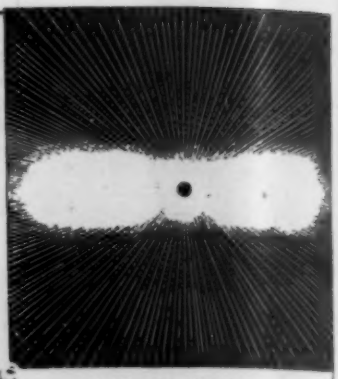
School Playgrounds Treated with Asphalt Surfacing Material

RICHMOND, VA.—The public schools of Richmond have long been troubled with the problem of keeping the playgrounds at the various schools in the city in satisfactory condition. Because of the constant tread of many feet, any grass that could be induced to grow during the summer vacation months was quickly trampled out of existence after the opening of the school term in September. During dry weather, clouds of dust would fill the school buildings, necessitating much extra labor and expense in cleaning operations. During rainy spells, the playgrounds became seas of mud, which was carried by the feet of the children into the halls and classrooms in unbelieveable quantities.

Captain A. B. Cousins, supervising mechanic for



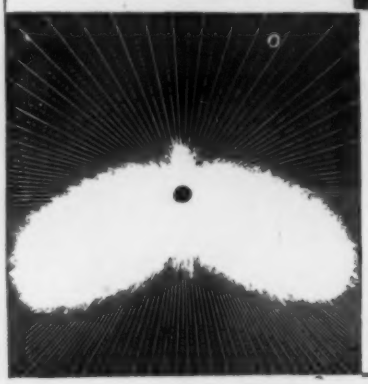
Light distribution of bare lamp



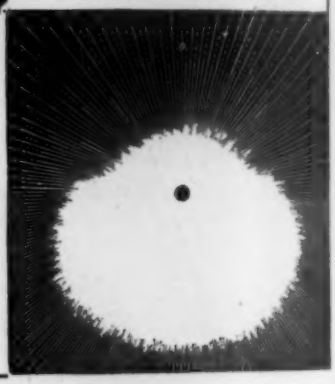
Light distribution of Holophane Asymmetric Refractor—2-way type

Light distribution of Holophane Asymmetric Refractor—Bilux type

Light distribution of Holophane Asymmetric Refractor—Dome type



Light distribution of Holophane Asymmetric Refractor—4-way type



All diagrams show the light distribution as viewed from above.

Most street lighting engineers specify

HOLOPHANE
ASYMMETRIC UNITS

Holophane Company, New York and Toronto

the schools, set about finding some method of eliminating the dust and mud evils at a cost within the means available. On account of the considerable area involved, it was impracticable and prohibitive to consider a hard, permanent pavement. Such a pavement would also be undesirable on account of danger of injury to children in frequent tumbles in their play. A surface that would be free from dust and mud, not too hard and unyielding, and which would entail a reasonable expenditure, was the result desired.

During 1923 and 1924 a few barrels of various bituminous materials were used experimentally in the treatment of small areas.

THE ROBERT E. LEE SCHOOL, RICHMOND, VA.
It is now mudless and dustless

THE J. E. B. STEWART SCHOOL AND PLAYGROUND, RICHMOND, VA.

Note the contrast between the section of the grounds that has been treated with Texaco surfacing material, and the untreated section in the left of the picture

Results from some of these experiments proving satisfactory, in 1925 the work was carried on on a larger scale. During 1925 four carloads of Texaco No. 55 surfacing material were applied to a number of the playgrounds in various parts of the city. In 1926 two more carloads were used, giving in some instances a second treatment to areas first treated in 1925. The areas treated at the schools vary in size from small corners to several thousand square yards.

The method of application is briefly described as follows: The area treated was leveled and smoothed with a scarifier and a blade grader; it was then rolled firm with a 5-ton roller; when thoroughly compacted and dried, it was swept clean and free from dust. The asphaltic surfacing material was then applied cold at a rate of approximately ½-gallon per square yard. The whole was then covered with coarse, clean, sharp sand such as is used in concrete construction, in quantity sufficient to just hide the asphalt. It was then re-rolled lightly. Because of some trouble experienced by the sticky material adhering to the feet of the children after the start of school, it was necessary to use an excess of sand over that actually required to combine with the asphalt. Some extra attention during the hot early fall days was required to keep sticky spots covered with sand. After the sand is thoroughly absorbed, however, this trouble disappears and after cool weather sets in, the excess sand may be swept aside and stored for future use.

The grounds treated at the Richmond schools now present a smooth, dustless, and mudless appearance during all kinds of weather. Before treatment, it was a common occurrence to remove a large number of buckets of mud from each building after every rainy day, while now it is a rare occurrence to get one bucket from the same building. The principals of several schools are quoted as saying that conditions have been vastly improved at their buildings both inside and out, and that the dust and mud annoyances have been greatly alleviated.

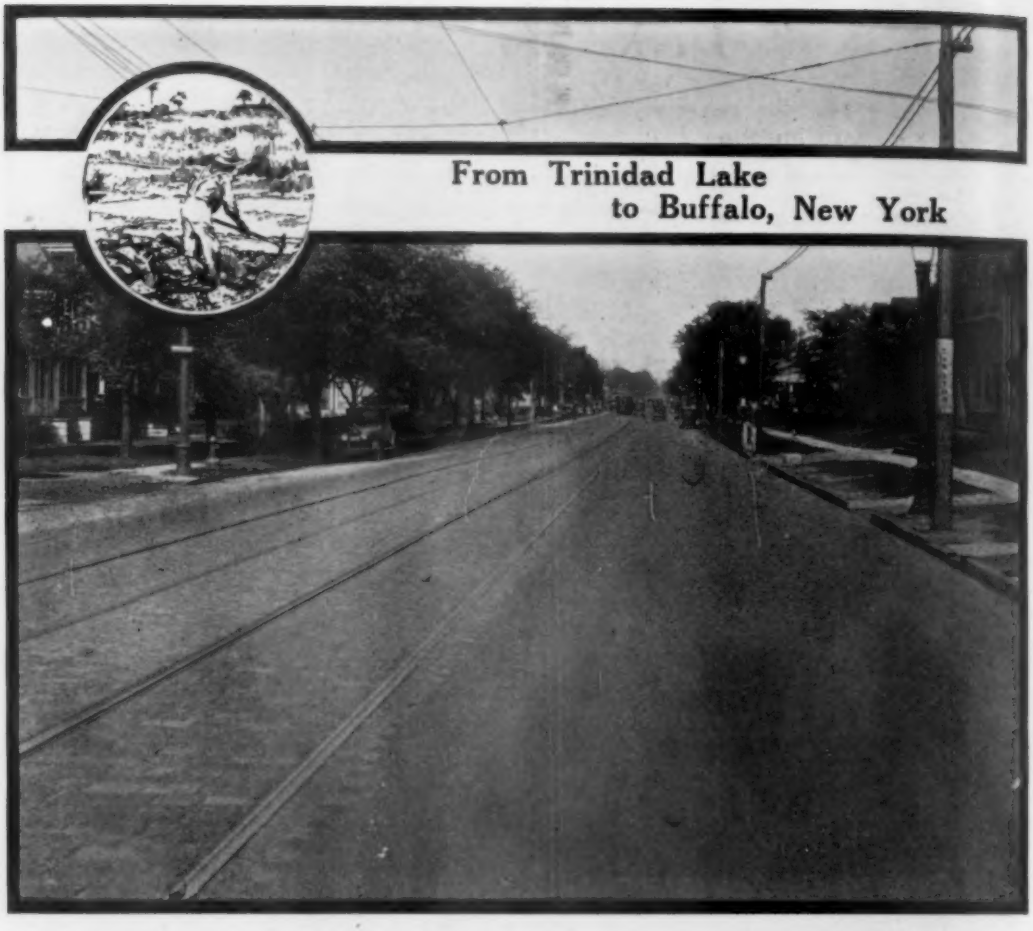
G. A. McCLELLAN.

Borough Council Floats Bond Issue to Retire Old Indebtedness

GREENCASTLE, PA.—The Town Council has just floated a $12,000 bond issue for the purpose of wiping out an accumulation of debts incurred over a period of ten years. A bond tax of 1 mill has been laid to provide for the retirement of the bond issue within the next ten years. The bonds have a 4 per cent interest rate and have nearly all been sold. A budget system has been adopted to guide the future expenditure of current revenues. Should the income of the borough now prove insufficient to meet the year's expenditures, a slight increase in the borough tax rate may be made to take care of this.

Another event of importance during the past year has been the purchase of the Greencastle Light, Heat, Fuel & Power Company by the Republic Service Corporation. The new corporation is linking up the Greencastle plant with the plants which it already owns in Mercersburg and McConnellsburg and is spending $15,000 in improving the local electric service. The Council is now considering a five-year contract with the company which will practically double the amount of light on the main streets of the town.

G. FRED ZIEGLER,
Chairman Publicity Committee, Board of Trade.



From Trinidad Lake
to Buffalo, New York

Twenty-seven years after!

Laid in 1900, this pavement on Main Street from Rodney Street to Amherst Street, Buffalo, N. Y., is giving such service as is known only to Trinidad Native-Lake Asphalt. And this particular thoroughfare is not an exceptional case, for Trinidad streets in various parts of the country are still giving service after as many as 46 years of use.

Nature-made Trinidad has amply demonstrated its long life and low cost of maintenance—and its attractiveness, resiliency, freedom from noise, and ease of cleaning and repairing are other desirable qualities.

The demands of *road* building are met to the best advantage with Bermudez Road Asphalt—another native-lake product. Write for interesting data.

The Barber Asphalt Company
PHILADELPHIA
New York Chicago Pittsburgh St. Louis Kansas City San Francisco

TRINIDAD LAKE ASPHALT

Items and Ideas

Booklet on "The Taxpayer's Dollar" Prepares City for Continued Progress

AN effective combination of an appeal to civic pride with information for taxpayers as to where their dollars go, and a pledge of extensive future improvements, are embodied in a 12-page booklet recently issued by Mayor Arthur A. Will, of Louisville, Ky. Three pages are devoted to a compilation of "Some Things All Citizens of Louisville Should Know," the lists showing the ways in which the city leads the world, ways in which it leads the United States, and in which it leads the South. Then follow pages comparing Louisville's tax rate and bonded debt with those of other cities of from 50,000 to 200,000 population, and an itemized analysis of how the taxes are expended and the purposes for which the bonds were issued. On the last page, under the heading of "A Bigger and More Progressive Louisville," is the following statement, compiled by the Public Utilities Bureau, of the city's program of improvements for 1927:

1. Increase in rate of pay for police and firemen from $4.00 per day to $4.25 for first two years of service, and from $4.00 per day to $4.50 per day for three years or more.
2. Increase in rate of pay for employees of the Free Public Library.
3. Twenty new automatic traffic signals.
4. Construction of Western Parkway.
5. The elimination of grade crossings will start during the year, to cost several million dollars.
6. The Louisville Water Co. will make improvements costing $1,000,000 for new pumping equipment, and extensions.
7. The Board of Education will make improvements costing $1,000,000 for two new junior high schools, and other school buildings.
8. The Sewer Commissioners expect to make extensive improvements in sewer construction costing $1,500,000.
9. An extensive traffic survey to cost $20,000.
10. The appraisal of the Louisville Railway Company's property will be completed to cost $50,000.
11. At least fifty additional fire-alarm boxes will be installed, together with a new motor fire-engine.
12. The incinerator for the Western Section will be completed and one started in the Eastern Section.
13. A $5,000,000 bond issue will be submitted to the public for a toll-bridge.
14. To start the construction of the Memorial Auditorium, to cost $800,000.

Will Your City's Water-Front Be Available for Healthful Swimming This Summer?

THE rapidly growing popularity of swimming as a summer sport makes intolerable the filthy condition of the water-fronts of most American cities. Our river-banks and our ocean and lake beaches ought to be among our finest recreational assets. How long shall we tolerate them as eyesores, dumps, and cesspools?

The fouling of the waters in the vicinity of New York has been arousing widespread and growing clamor from civic organizations and newspapers of the region. The following forceful comments are from an editorial in the *Newark Evening News*:

"Mankind has an unfortunate propensity for fouling its own nest. Also for taking the easiest way out of a difficulty. For at least twenty years the Hudson, from Tarrytown down, has become increasingly befouled, until the shad have fled and bathing has been restricted to the ignorant or careless. Sewage and industrial wastes of all kinds, blandly dumped into the stream, are, of course, to blame for it. And allied with this crude disposal method is the dumping of the great city's garbage into the ocean, to make its reappearance on New Jersey and Long Island beaches.

"It is time for the governments of all municipalities bordering the lower Hudson and New York Bay to wake up to the fact that they must find a better way to get rid of their excretions. Forehandedness has been lacking in them all. Without desiring to appear superior, it is fair to note that Newark has taken the opposite course and in both its water-supply and sewage disposal has been forehanded, and is now reaping the benefits. This might also be pondered by various municipalities hereabouts which have been pursuing a laissez faire course in such things. Putting off the day of reckoning only increases the ultimate burden.

"Installation of intelligent and effective sewage disposal is possible—not only possible, but actually in operation. Those cities and towns which are postponing the evil day are badly governed. Sooner or later they must cease polluting waters bordering great concentrations of population, and it is going to cost them a pretty penny. Why put off the inevitable."

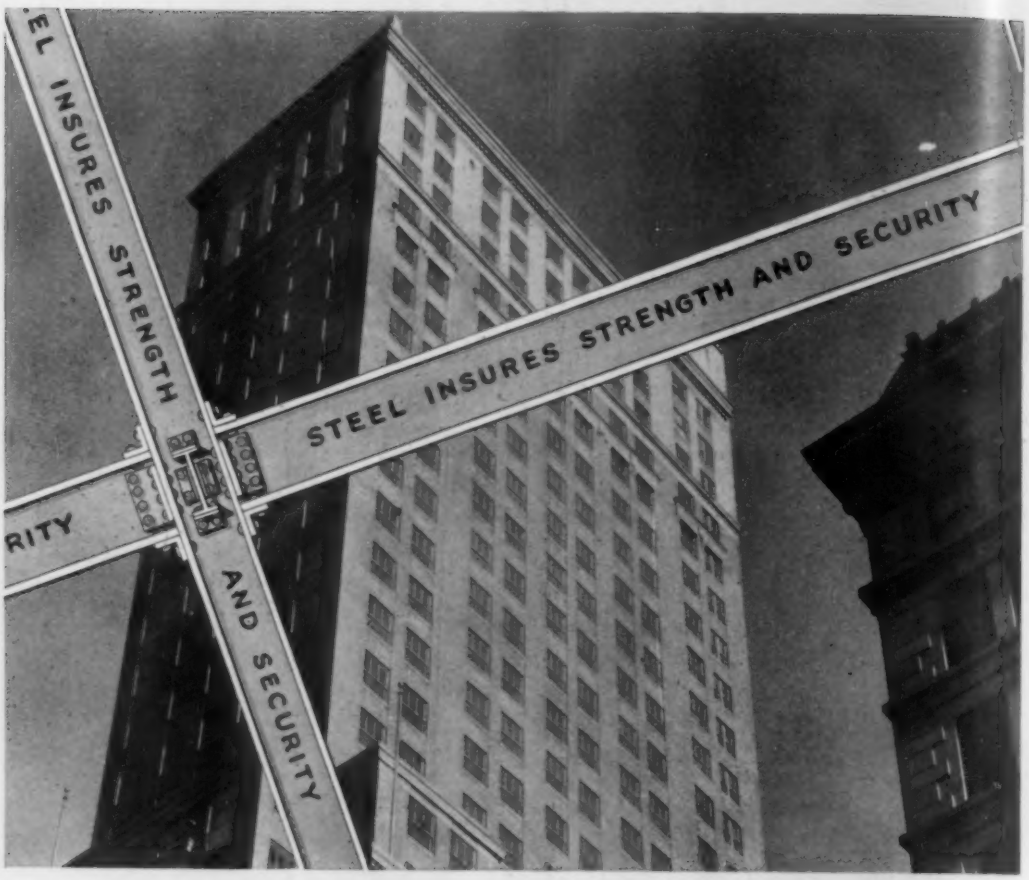
Chambers of Commerce Aid in Prolonging Life by Cooperative Effort

IN cooperation with the Committee on Administrative Practice of the American Public Health Association and the National Association of Life Underwriters, the Chamber of Commerce of the United States is embarking upon a broad program which has for its goal the enlistment of chamber of commerce interest throughout the country in health and life conservation.

The National Association of Life Underwriters has appointed a special committee to cooperate with chambers of commerce in health matters. The purpose of this committee is to stimulate interest of local life underwriters in health activities undertaken by chambers of commerce. Since it has been estimated by life insurance authorities that every year of lengthened life saves $40,000,000 to the 60,000,000 policyholders of the country, underwriters should naturally be vitally interested in such a service.

A wealth of information has been accumulated by the American Public Health Association on various matters pertaining to health work. It has facilities for undertaking research work on local health problems and is equipped to render technical service to health committees.

In addition to the data obtainable from various medical and health organizations, the Civic Development Department of the National Chamber has issued literature of interest to chambers of commerce engaging in health work. Its interest covers



WHEN ONLY *STEEL* WILL SERVE

IF YOU want to specify the strongest building material known, for either tall or small structures, you must specify steel. If you want minimum weight and maximum space per strength-unit, only steel will do. If you want a fully homogeneous material—one produced in large quantities under expert supervision, delivered to the job finished and fool-proof, you must insist upon steel.

Facts like these are being given to the public through the educational advertising of the American Institute of Steel Construction. Write for the full details of this remarkable educational work, in which your cooperation is requested. Ask also for the Institute's Code of Practice, Standard Specifications and the fact-book, "STEEL NEVER FAILS."

This advertisement is published by the American Institute of Steel Construction, a non-profit service organization of 218 members comprising the structural steel industry in the United States and Canada. Contributing also to the educational fund are these great rolling mills: Bethlehem Steel Company, Inland Steel Company, Jones & Laughlin Steel Corporation, Scullin Steel Company. The purpose of the Institute is to extend the use of structural steel in construction work of every size and type, from residences to skyscrapers and bridges. The Institute offers fullest co-operation with architects, engineers, the public and all branches of the building trades. Correspondence invited. Address: Lee H. Miller, M. Am. Soc. C. E., Chief Engineer, AMERICAN INSTITUTE OF STEEL CONSTRUCTION, Inc., 285 Madison Avenue, New York City.

When writing to Advertisers please mention THE AMERICAN CITY—Thank you.

sewer systems and sewage disposal, drainage, water-supply, garbage collection and disposal, refuse collection and disposal, smoke, noise and odors, clean-up campaigns, recreation, housing, health and physical education of school children, and coordination of health and social agencies.

To stimulate the efforts of local health committees in connection with this cooperative service, the Insurance Department of the Chamber of Commerce of the United States has begun the publication of a *Health Bulletin*, a copy of which can be obtained on application to the National Chamber's headquarters in Washington, D. C.

Political Meddling with Police and Fire Services

THAT authorities on police and fire administration are generally opposed to provisions in city charters which give to civil service commissions a share in the administration of these services, is pointed out in an editorial in the March number of the *National Municipal Review*. The position of police and fire chiefs, as a rule, is that the control of their departments is interfered with, if not practically destroyed, by the participation of civil service commissions in discipline, dismissals, and promotions.

The editorial continues:

"Recent evidence collected by the Cleveland Citizens' League seems to establish the soundness of this position. Under the Cleveland charter, dismissed or demoted policemen or firemen may appeal to the civil service commission. The framers of the charter seem to have contemplated that the civil service commission would serve as a check only upon unjust dismissals and demotions. The possibility that the commission would be more political-minded than the responsible heads of these services does not seem to have entered their minds.

"Yet, according to the Citizens' League, the civil service commission 'during the past three years has repeatedly restored admitted violators of the state law, city ordinances and departmental rules, to their positions, even when the evidence of their guilt was clear and beyond question.' During the year 1925, the civil service commission sustained the director of public safety in only 38 per cent of the appeals. Obviously, under such circumstances, no sensible person can hold the director of public safety strictly accountable for the morale of the police and fire-fighting forces.

"The Cleveland situation should be considered as another call to a re-examination of the proper relationship of a civil service commission to the operating heads of departments. Much of the progress in municipal administration in recent years has been due to the adoption of the short ballot principle, an important element of which is unequivocal concentration of responsibility in department heads. To allow any outside agency to share in control defeats the short ballot idea.

"The revised model charter of the National Municipal League, now going to press, permits appeal to the civil service commission by discharged employees, but the decision of the commission is advisory only. The commission cannot defeat the action of the city manager or the appropriate department head. This, indeed, seems as far as any civil service commission should be allowed to go."

Funded Debt of New York City Exceeds Billion and a Half

THE report of Comptroller Charles W. Berry of New York City, on the city's finances, issued on February 26, shows the general classification of the city's bonded debt to be as follows:

Jan. 1, 1927—Total bonded debt.....	$2,237,243,786.59
Less: General fund bonds.....	576,250,000.00
The real funded debt of the city is..	$1,660,993,786.59

The bonds comprising the city's debt were issued and the proceeds used for the following general purposes, of which the outstanding amounts are:

Rapid transit (subways)—(Includes exempted bonds amounting to $51,013,724.86)	$301,609,888.77
Water-supply (includes exempted bonds amounting to $262,456,631.86).....	277,203,328.10
Docks and ferries (includes exempted bonds amount to $69,943,053.55)....	143,088,503.14
Bridges	107,772,613.02
Streets, roads and trunk sewers.....	146,274,391.17
Recreation, science and art (art museums, &c.)	68,800,465.16
Sanitation (Street Cleaning Department, &c.)	11,308,221.51
Hospitals	28,461,415.57
Public welfare—buildings and equipment	6,370,866.19
Education—schools and libraries.....	275,117,956.67
Correctional institutions	3,134,203.36
Protection of life and property—Police and Fire Departments	17,326,326.75
Other public buildings and offices.....	69,815,563.08
Miscellaneous purposes	7,802,284.03
Deficiencies in taxes	25,579,995.43
Assessment bonds	61,532,764.59
Jan. 1, 1927—Grand aggregate of corporate stock, serial bonds and assessment bonds	$1,551,198,786.59
Corporate stock notes	109,795,000.00
Grand total, as above.....	$1,660,993,786.59

The total unreserved margin of debt-incurring power, within the constitutional debt limit, was $101,521,364.86 on January 1, 1927. On March 1 there became available an additional amount of $154,225,736.80, 10 per cent of the increase in the assessed valuation of taxable realty in 1927. The Board of Estimate and Apportionment has authorized additional expenditures, from January 1 to February 28, inclusive, of $12,716,100, making a net available margin on March 1 of $243,031,001.66.

To Facilitate the Distribution of Flowers to the Flowerless

WITH the coming of spring the flower booths in the cities where there are branches of the National Plant, Flower and Fruit Guild are being made ready for the opening of the season's activities.

For more than thirty years this national organization has, through its local Guilds, maintained receiving stations where flowers, fruits, and vegetables are gathered for distribution among the poor and lonely men and women, the crippled and shut-in, the aged and unhappy, and the various hospitals, homes, and other institutions in our larger cities. These booths are centrally located where they may be easily reached by men and women who are willing to donate for distribution in this way the surplus from their gardens and estates.

In cities which have a large commuting population each day, the flower booths are preferably located in the railroad stations; in other cities the Chamber of Commerce may provide a room for this purpose; or receiving stations may be found

Stop skidding!

Add safety to your highways. A Tarvia surface is skid-safe, and easy and inexpensive to lay.

The Barrett Company

New York Chicago Philadelphia Boston
St. Louis Cleveland Cincinnati Kansas City
Detroit Salt Lake City Birmingham Lebanon
Minneapolis Milwaukee Bethlehem Columbus
Youngstown Syracuse Toledo Rochester
Baltimore Providence Buffalo

In Canada:
THE BARRETT COMPANY, Limited
Montreal Toronto Winnipeg Vancouver

Tarvia
For Road Construction Repair and Maintenance

in the Boy Scouts cabin, the City Hall and other prominent locations. The number of these stations varies, Cleveland, Ohio, heading the list with ten. There are five booths in Boston and two in Manhattan. The Guild, as a result of successful experience with one booth last summer in Chicago, plans to open additional stations there this year.

As conservation is the keynote of the Guild's activities, it makes a direct appeal to local civic organizations to help provide, for those who have gardens and farms, an opportunity through the use of their surplus flowers, fruit and vegetables to add to the happiness and contentment of those who otherwise would have none of the joy that these gifts supply.

The headquarters of the National Plant, Flower and Fruit Guild are at 70 Fifth Avenue, New York, where literature is sent out and any information regarding its work will be gladly furnished.

Flag Indicates No Child Deaths from Automobile Accidents

ON the first of each month, says the *National Safety News*, the banner shown in the illustration is flown from the office of the Toledo Safety Council and remains in position as long as no accidental deaths to children are reported. This flag has taken the place of the mourning flag which, as mentioned in THE AMERICAN CITY for November last, was used during 1926 to announce the accidental death of a child.

Courtesy of the National Safety Council

FLAG FLOWN FROM OFFICE OF TOLEDO SAFETY COUNCIL

May Day for Child Health to Be Widely Celebrated

EACH year, May Day for Child Health assumes a more important note, nationally and locally, as a day which, with celebrations that revive the old May Day traditions, gathers up results of the year's progress in child welfare within the different communities and gives stimulus to increasing efforts.

Many mayors of leading cities—and the custom is spreading to smaller cities—recognizing the value of a day which focuses interest upon the well-being of children, issue proclamations commending the day to public attention. State and city boards of health are active in fostering through May Day the efforts to protect the health of children.

Municipal celebrations in which school children and playground associations, Boy and Girl Scouts, and other groups join, are held in many places throughout the country. One of the most successful celebrations in 1926 was a community pageant held in Highland Park, Detroit. Various organizations participated in the pageant and financed it. This year the celebration will be given again, but it will be promoted and paid for by municipal funds.

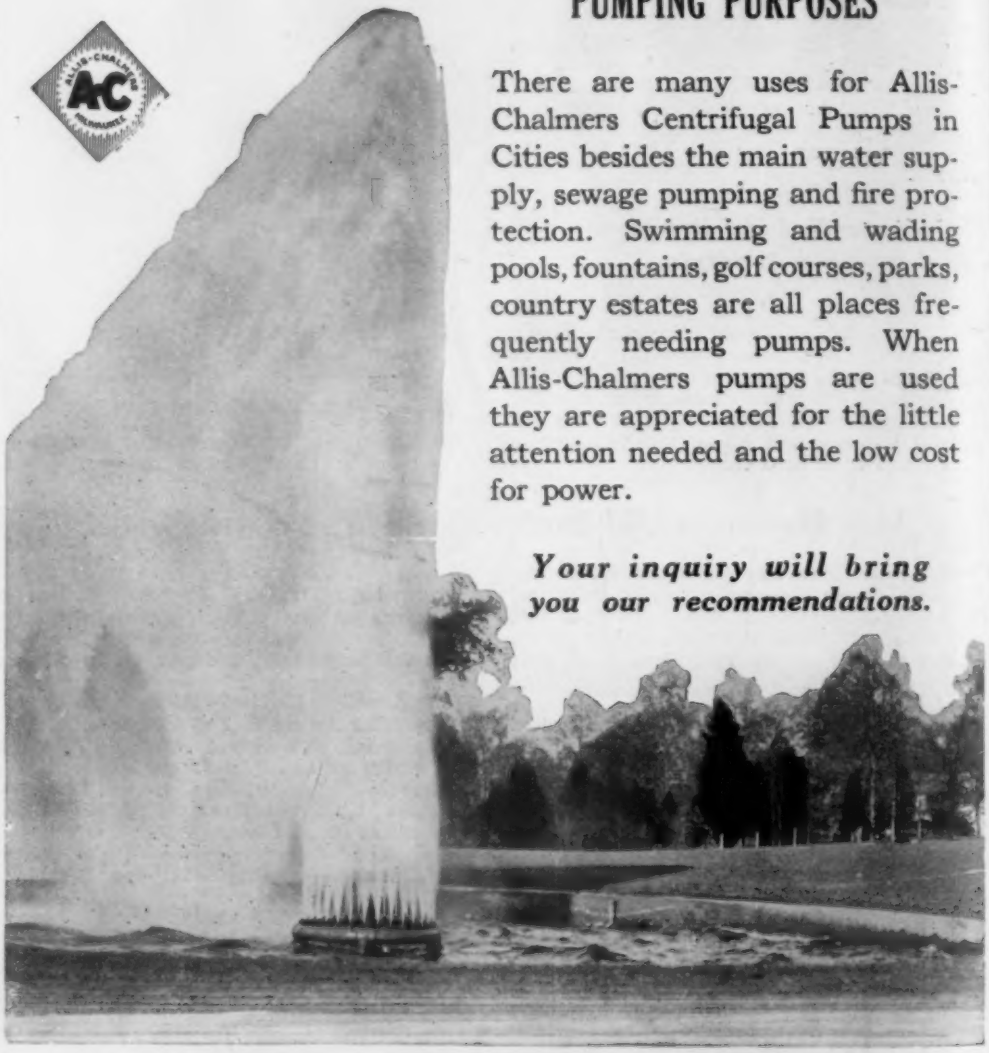
The American Child Health Association, which is responsible for the idea of May Day, having in mind the fact that May 1 falls on Sunday this year, makes an appeal to the country to think of children in terms of spiritual as well as physical and mental health. In other words, May Day, 1927, holds up the ideal of whole and perfect childhood. The churches of the country of all denominations and faiths are cooperating in this greatly expanded significance of the May Day idea. Mr. Hoover expresses the complete ideal which the day celebrates in "The Child's Bill of Rights":

The Child's Bill of Rights

The ideal to which we should strive is that there shall be no child in America that has not been born under proper conditions, that does not live in hygienic surroundings, that ever suffers from under-nutrition, that does not have prompt and efficient medical attention and inspection, that does not receive primary instruction in the elements of hygiene and good health; that there shall be no child that has not the complete birthright of a sound mind in a sound body and the encouragement to express in fullest measure the spirit within which is the final endowment of every human being.—Herbert Hoover.

CENTRIFUGAL PUMPING UNITS

for MUNICIPAL PUMPING PURPOSES



There are many uses for Allis-Chalmers Centrifugal Pumps in Cities besides the main water supply, sewage pumping and fire protection. Swimming and wading pools, fountains, golf courses, parks, country estates are all places frequently needing pumps. When Allis-Chalmers pumps are used they are appreciated for the little attention needed and the low cost for power.

Your inquiry will bring you our recommendations.

ALLIS-CHALMERS

MILWAUKEE, WIS. U.S.A.

Small City Health Department Adopts Rules for Carnivals and Circuses

LIKE "the flowers that bloom in the spring," this time of year sees the advent of the carnival and traveling show. The children—from six to sixty—await with delight the coming of the luridly advertised "Fairy Land," with its conglomeration of freaks, Wild West Show, vaudeville acts, hot dog stands, and pink lemonade booths.

To all but the health officer the occasion is one of unrestricted gaiety. To the health officer it is a bugbear, for the opportunity for the spread of communicable disease is ever present. In one municipality a serious outbreak of communicable disease was traced to a traveling troupe of players; an experience which led to the adoption of certain restrictions.

The Board of Health of Plainfield, N. J., for many years attempted to exercise vigilance over this type of amusement by requiring a so-called health certificate from a physician or other authority in the town from which the show had just come. After the landing of the troupe and equipment, all persons were examined by the city physician for evidence of acute infections. Although this practice is perhaps of questionable value, it led to the adoption of the following rules and regulations, which are rigidly enforced.

RULES AND REGULATIONS GOVERNING CARNIVALS, CIRCUSES, ETC. ADOPTED BY THE BOARD OF HEALTH OF PLAINFIELD

1. Health certificates covering all employees and animals must be submitted before the unloading of any paraphernalia is allowed.
2. Personal examination of all individuals connected with the show by the city physician and health officer must be permitted. A charge of twenty-five cents per head is made for this examination.
3. Adequate toilet facilities must be provided before the show lands. At least one temporary privy vault must be available for each sex, and the contents must be kept liberally covered with chloride of lime at all times.
4. All garbage must be stored in proper metal containers and shall be removed by a licensed collector at least once each day.
5. The show ground must be maintained and left in a sanitary condition. A deposit of twenty-five dollars shall be made with the Board of Health to insure fulfillment of their requirements.
6. All food and drink displayed on the show grounds for sale shall be protected from dust, dirt, and flies, and all glasses, dishes, and spoons must be thoroughly cleaned before each use.

—From *Public Health News*, Department of Health, State of New Jersey.

Pupils and Teachers to Get $6,500 in Prizes in Safety Competition

THE question as to whether children should be taught street and highway safety at home or at school is one that hundreds of thousands of elementary school pupils will be asked to solve for themselves within the next few weeks in connection with the sixth annual safety campaign, just announced by the Highway Education Board, of Washington, D. C.

As an incentive to participation, the Board announces the gift of $6,500 from the National Automobile Chamber of Commerce to be expended in prizes allocated throughout the several states and in the territories, such as Alaska, the Philippines, and Hawaii. One thousand dollars of the prize money is set aside for teachers who write the best safety lessons while their young charges are preparing the more simple masterpieces in essay form. The teacher winning first national honors will receive a check for $500, and also will make a trip to Washington, with all expenses paid, whether she come from Maine or California, or points in between. The teachers winning second and third national awards will be the recipients of $300 and $200 respectively, but they will not be invited to Washington as the Board's guests.

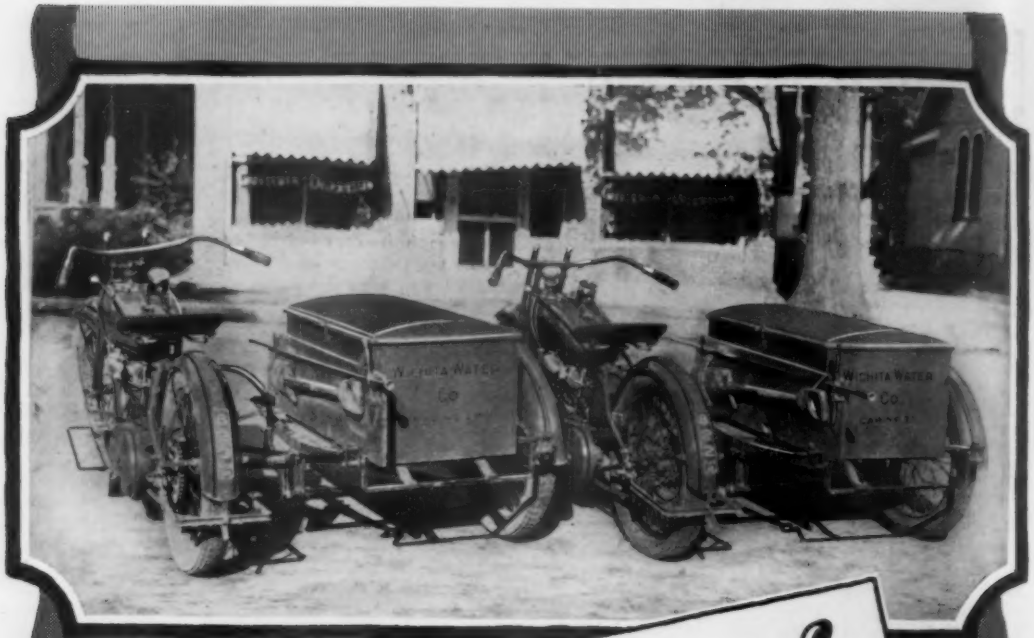
Illustrated literature in the form of posters and folders, giving the simple rules of the contest, is now being distributed to schools, Boy Scout organizations, Camp Fire girls, women's clubs, Safety Councils, Automobile Clubs, and kindred organizations. The contests close to participants May 6, leaving only a few weeks of intensive effort for the preparation of papers by those who are to compete.

Eye Tests for Automobile Drivers in New Jersey

ON March 1 the Motor Vehicle Department of New Jersey inaugurated as part of its work vision lists of all applicants for drivers' licenses. In a letter on this subject to the Editor of THE AMERICAN CITY, Commissioner W. L. Dill writes:

"These examinations will be conducted under the supervision of our inspection force with the assistance of optometrists, oculists and physicians of the state who have cheerfully volunteered to lend their aid.

"The question of vision is one that can readily be determined by the practical test of the operator as to his skill in driving and by the ordinary chart test and examinations so familiar to oculists and optometrists."



Ready for any water service emergency!

WICHITA, Kansas, Water Department is geared up to render quick service at the lowest cost.

Two Harley-Davidson Package Trucks are always ready at a moment's notice. Each machine covers more than 1200 miles per month at the amazingly low cost of slightly over 2¢ per mile — a mere fraction of automobile maintenance! An average load of 150 lbs. is carried. These machines were operated for over a year and a half before being overhauled.

Your city will find this quick, dependable, low cost service valuable. Not only 2600 police departments, but other municipal departments are finding out that Harley-Davidsons improve service and cut costs. *Write for special descriptive literature.*

HARLEY-DAVIDSON MOTOR CO., Dept. M, *Milwaukee, Wis.*

HARLEY-DAVIDSON
Motorcycles

Municipal Accounting and Finance

Conducted by Francis Oakey, C. P. A.

Member of the Firm of Searle, Oakey & Miller, New York

The Funding of Receipts

BEGINNING with the discharge of a few simple responsibilities, relating in time of peace mainly to the protection of the citizen's person, property, and civil rights, municipal government has developed into a complex machine. Today the municipality performs a great variety of services, financed by various means, and benefiting various groups and classes. This development has covered a period of many centuries and is the natural result of the progress in medicine, engineering, education, and finance.

The complexity of municipal government is at once apparent when an attempt is made to classify its functions. From the standpoint of means of financing and the scope of their benefits, these functions may be roughly classified as follows:

A. *Those financed by general taxation, since they benefit all the people directly*:
   1. Protection of persons and property and maintenance of order, through police power
   2. Protection from fire
   3. Administration of justice
   4. Preservation of health
   5. Maintenance of sewerage system
   6. Maintenance of streets
   7. Cleaning of streets and disposal of garbage and refuse
   8. Executive control
   9. Representative control

B. *Those financed partly by general taxation and partly by special revenues, grants and donations, since they benefit certain groups or classes directly, but all the people indirectly*:
   1. Care of the defective, dependent, and delinquent
   2. Education
   3. Maintenance of parks, playgrounds, and public baths

C. *Those financed by special assessments for local improvements, such as the construction of new streets, curbs, gutters, sewer extensions, etc., since they benefit the owners of the abutting property*

D. *Those financed by bond issues, since they benefit future generations*:
   1. The construction of public buildings
   2. The construction of highways
   3. The construction of sewers

E. *Those financed by sales of service, since their benefits accrue directly to those who avail themselves of the service*:
   1. The construction, equipment and operation of water, gas and electric lighting systems
   2. The construction, equipment and operation of street railways

The foregoing classification is not advanced as logical and consistent in all respects; it serves to show, however, the complicated relationships which exist between expenditures and the means of financing them. It is these relationships which have brought about the process of funding receipts, which exists in all cities and is one of the distinguishing features of municipal finance.

Definition of a Fund

A fund is an accumulation or store of resources gathered together and set aside to finance the rendition of certain services, the acquisition of certain facilities, or the discharge of certain obligations. In municipal affairs a fund is always created for a definite purpose. It is established by law, except in rare instances when based merely on an executive order. Its resources are derived from certain specified sources, such as a specific tax, a specific loan, a special assessment, or a specific revenue either arbitrarily set aside or definitely related to the expenditure which the fund is created to defray. The law which establishes a fund not only states the purpose for which it shall be spent but also the sources from which its resources shall be derived. The distinguishing feature of a fund is that it gives practical effect to the provisions by which moneys are raised to defray certain expenditures. By the process of funding, certain receipts are confined to the financing of certain expenditures and no others.

The Process of Funding

In theory, the process of funding consists in separately storing certain receipts as a means of assuring their application to certain expenditures. In practice, such physical segregation is not necessary; a separate account for each

You CANNOT Spoil Your Ballot

On the Voting Machine

THOUSANDS of paper ballots are thrown out at every election because they are improperly marked or otherwise defective. The result of many a close election would have been different if there had been no votes eliminated because of spoiled ballots.

With the voting machine there can be no spoiled or defective ballots. You cast your vote by turning down a pointer over each candidate's name. No marks are required.

And you cannot vote for more than the proper number of candidates. If you are voting for Governor, you can vote for one and only one; if three judges are to be elected, you can vote for three but no more. *Mechanical* controls make it impossible for you to spoil your ballot on the voting machine.

This and other equally important advantages have influenced over 1,800 communities to discard the antiquated paper ballot and install machines.

Some Causes of Spoiled *Paper* Ballots

1—Pencil marks that might identify ballot
2—Voting for more than proper number of candidates
3—Failure to make cross mark within square
4—Attempted erasure to correct a mistake
5—Use of fountain pen instead of pencil
6—Enthusiastic voter writes message on ballot
7—Some voters sign their names to ballots

AUTOMATIC REGISTERING MACHINE CO., INC.

JAMESTOWN NEW YORK

SEND TODAY FOR ILLUSTRATED DESCRIPTIVE BOOKLETS

fund is generally sufficient, to which all its receipts are credited, although in the case of certain kinds of funds, such as sinking-funds, the physical segregation of resources is sometimes required by law. Thus the process of funding becomes, generally, a process of accounting.

The General Fund

In the early stages of organized government, all the receipts which came into the public treasury constituted one fund to be expended by appropriation. As the scope of government services widened, various means of financing were adopted—mainly from necessity, but also for the purpose of distributing the cost according to the benefits received.

The development of the science of engineering made possible the construction of great public works designed to last for many years, benefiting a succession of taxpayers, and costing far more than could be raised by taxation in any one year. Financing by borrowing naturally resulted, and the proceeds of the loans were separately funded to be applied solely to the proposed construction.

The extension of government activities suggested to the legislator the relative importance to the public of one expenditure as compared with another. The result was the raising of special taxes or the setting-aside out of the general treasury certain receipts to support certain services considered of paramount importance. In this way special funds were established.

All receipts not specifically set aside by law constituted the "general fund," available for such expenditures as the legislative body might determine. The general fund provides the resources to finance those services which are currently rendered and which benefit all the people directly. Its resources are expended under appropriations, since the provision universally exists that no money may be drawn from the treasury except in consequence of appropriations made by law.

Kinds of Special Funds

There are many kinds of special funds, that is, funds created for special purposes. Let us consider some of the most common kinds from the standpoint of the reason for their establishment.

Bond Funds (or Loan Funds).—When a city borrows to finance the construction of public works, the purpose for which the money is to be spent is specifically stated in the authorization. It becomes the duty of the administration to see that the proceeds of the loan are spent for no other purpose. To facilitate the discharge of this duty the amounts of the proceeds of each loan are separately accounted for.

Special Assessment Funds.—The opening of new streets, the extension of sewers, etc., tends to increase the value of abutting property. Therefore the owners are required to pay a portion of the cost, which is fixed by special assessments. Steps must be taken to make certain that the moneys thus received are expended solely for the improvements specified. The funding process consists in establishing a special account for each improvement.

Sinking-Funds.—Since redemption of debt by means of sinking-funds involves investment of resources and of income accumulations, the process of funding requires physical segregation of receipts in addition to the keeping of separate accounts. The sinking-fund exemplifies the original principles of funding receipts.

Special Revenue and Expense Funds.—This class of fund consists of specified revenues set aside to defray the cost of carrying on specified activities. The increments are derived from various sources, such as special tax levies, licenses, fees, fines, service charges, etc. These funds are very numerous, and cover a wide field of purposes. A large group are those established to account separately for the receipts and expenditures of public utilities.

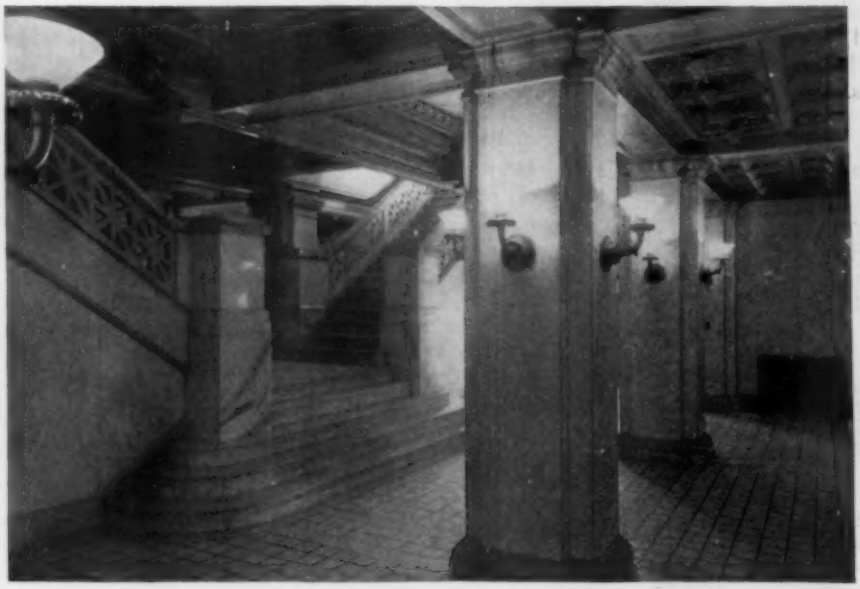
The reasons which have led to establishing special funds for public utilities are that such activities should be self-supporting, dependent solely upon the charges collected for the services rendered, and that therefore the revenues and expenditures must be separately accounted for.

Another large group of special revenue and expense funds are those established to support educational or recreational functions, such as school funds, library funds, park funds, etc. Such funds have been established because of the belief that it is of paramount importance to provide a satisfactory educational system and facilities for recreation, and therefore special taxes must be laid or revenues set aside to assure adequate resources for these purposes.

Special Funds as a Hindrance to Sound Financial Management

In the United States the practice of establishing special funds is widespread. There are certain classes of special funds, the creation of which is essential to sound management, namely:

Sinking-funds
Assessment funds for social improvements
Bond or loan funds



Marble in the Criminal Courts Building, Dallas

One of the EVERYDAY USES of MARBLE

Yours for the asking---

A NUMBER of attractive folders, each suggesting and illustrating a particular use of marble, are yours for the asking. Any, or all of them, will be gladly sent you upon request. These suggested everyday uses of marble are particularly appealing, and evidence the utility, decorativeness and economy of this inimitable material.

The list of these printments follows; simply check the ones that interest you, and write Department C-11. No obligations—of course.

Marble's Place in the Home.
Distinctive Bank Interiors.
Marble in Office Buildings.
Better Lavatories are of Marble.
Hygiene in School Buildings.
Impressing the Hotel Guest.
Maintaining Sanitation in Hospitals.
Marble Within the Church.
First Impressions on the Theater Goer.
Marble for Store Interiors.
Giving Distinction to the Apartment House.
Marble in Library Buildings.
Marble in Lunch Rooms.
The Superiority of the Marble Floor.
The Bathroom Comes Into Its Own.
Giving the Kitchen Its Due.
Marble in the Garden.
The Economy of Marble Store Fronts.

NATIONAL ASSOCIATION *of* MARBLE DEALERS

ROCKEFELLER BUILDING · CLEVELAND · OHIO

There is No Substitute for Marble

Funds for public utilities

Special funds must also be established to account separately for grants, donations, endowments, and the property of private persons which may come into possession of the city. But, in the opinion of the writer, there are serious disadvantages in establishing by special tax levies or by the setting-aside of general revenues many of the special revenue and expense funds which exist—for example:

Park funds
Library funds
Pension funds
Bond interest funds
Anti-toxin funds

The creation of such funds restricts the general resources of the city by diverting important revenues from the general fund, so that they are no longer subject to the general power of appropriation. The result is the overemphasis of the relative importance of certain activities by placing restrictions, usually permanent in character, upon the will of future generations as to the scope and purpose of expenditures. Finally, such funds are a great hindrance in effective budget making.

Funding of Receipts in Relation to Budget

It is thought that, with the exception of three classes, all receipts should be included in the financial program or budget. The first exception is the receipts from the operation of public utilities. For each public utility the receipts should not only be separately accounted for but physically segregated in order to maintain, as far as possible, independence in the financial management of the utility. The second exception is the income on sinking-fund investments, which should also be segregated and separately accounted for in order to insure the redemption of debt. The third exception is receipts of moneys or property belonging to private persons, which must be held in trust to be returned to the owners. These receipts, of course, must be segregated and separately accounted for.

All other classes of receipts vitally affect the general financial program and should be estimated in the budget. Such receipts should not be physically segregated, but should be deposited in the general treasury, controlled, however, by the establishment of suitable fund accounts, as follows:

There should be a fund account for each bond issue, for each local improvement and for each endowment. Receipts from all other sources should be funded and accounted for in the general fund and thus made subject to the power of appropriation.

—*Copyright*, 1927, *Francis Oakey*.

The Municipal Bond Market

By Sanders Shanks, Jr.

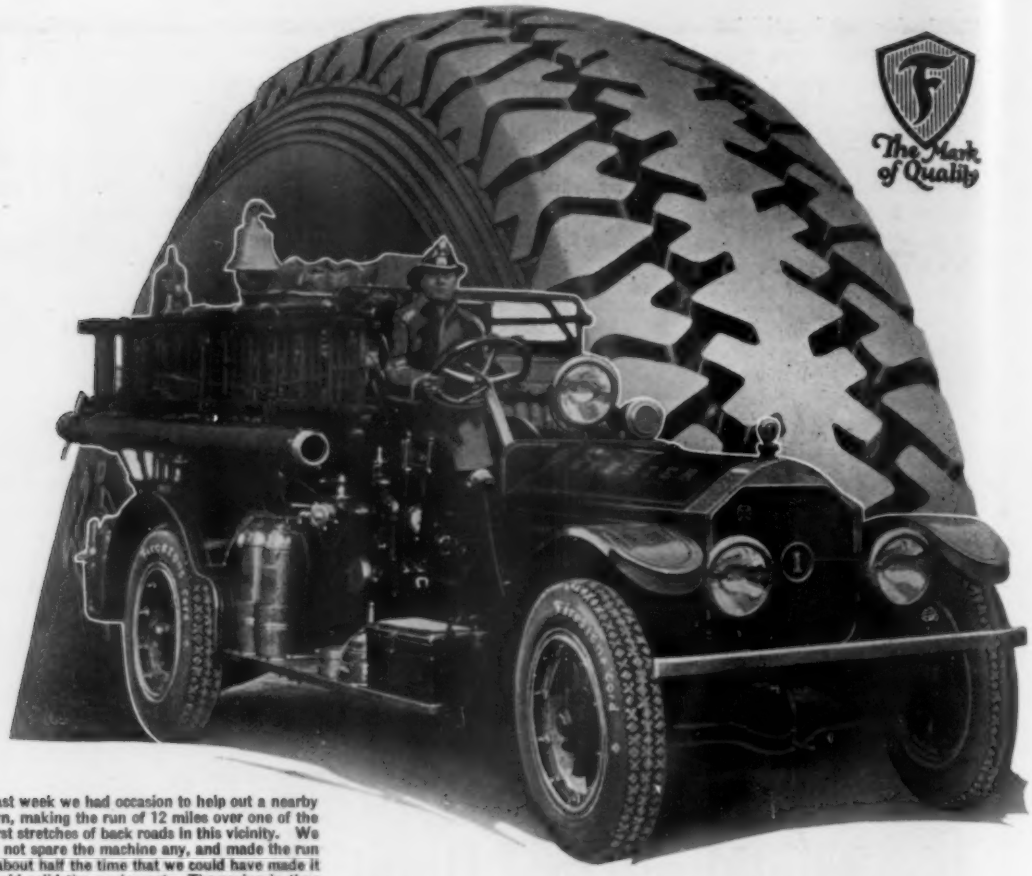
Editor, *The Bond Buyer*

JUST as the active demand for investment securities, which usually features the early weeks of the year, had begun to fall off, the U. S. Treasury Department's offer of a new 3½ per cent five-year note in exchange for the second Liberty 4¼'s (callable November 15, 1927), was made public, with the result that the public's interest in high-grade long-term bonds has again been stimulated. The market for municipal issues, which had already advanced since the first of the year, now appears stronger than ever. Holders of Liberty bonds, as well as others who have funds available for investment at this time, are becoming convinced that the outlook for declining interest rates could hardly be better, and hence they are showing an increasing keen interest in long-term securities, especially those of the tax-free municipal variety.

The following table of recent bond sales will serve to indicate the terms upon which counties, cities, villages, and districts are arranging permanent loans in the bond market:

Amount	Issue	Rate %	Term (Yrs.)	Yield %
$ 550,000	Somerset, Mass.	4	14 5/6 Avg.	3.92
1,236,000	State of Oregon.	4	16½ Avg.	4.00
600,000	New Castle, Pa., Sch. Dist. ...	4¼	26¼ Avg.	4.09
13,700	De Kalb Co., Ind.	4½	5¾ Avg.	4.18
68,000	Eastchester, N.Y.	4¼	7 2/3 Avg.	4.23
50,000	Dayton, O.	4½	13½ Avg.	4.24
220,000	La Crosse, Wis.	4½	1-20 Ser.	4.25
100,000	Portland, Ore...	4½	6 Avg.	4.30
59,000	Atl. Co., N. J...	4½	2-31 Ser.	4.31
250 000	San Bernardino, Calif., Redl'ds High Sch. Dist.	4¾	1-20 Ser.	4.31
252,000	Akron, N. Y....	4½	4-39 Ser.	4.32
200,000	Maricopa Co.... Ariz., Sch. Dist. No. 1...	5	20 Ser.	4.45
50,000	Ventura Co., Calif., Moorpk. Sch. Dist. ...	5	12 Avg.	4.46
750,000	Tulsa, Okla., Sch. Dist.	5	19 1/3 Avg.	4.50
4 000	Decatur, Nebr...	4½	5-20 Opt.	4.50
200,000	Lima, O., Sewer Dist.	5	2-26 Ser.	4.58
100,000	Reidsville, N. C.	5	22 1/3 Avg.	4.87

For Financial Statistics of Cities see pages 516 to 521



"Last week we had occasion to help out a nearby town, making the run of 12 miles over one of the worst stretches of back roads in this vicinity. We did not spare the machine any, and made the run in about half the time that we could have made it on old solid tire equipment. The saving in time in our business is an item of untold importance. There is no question in our minds regarding the efficiency of Firestone Tires."—Arthur Belmore, Chief, Webster Fire Department, Webster, Mass.

Safety—Stamina—Speed

The experience of Fire Chiefs throughout the country has demonstrated the superior non-skid qualities of the scientifically designed Firestone Tread. More sharp edges and angles give an extra margin of safety for emergency runs. Gum-dipping saturates the cords of the carcass in a rubber solution, insulating every fiber with rubber and protecting the cords from friction and fatigue. That is why Firestone Tires give so many extra thousands of miles in service.

To get the performance that only Gum-Dipped tires can give, specify Firestones on new equipment and go to your local Firestone Dealer—he will serve you better and save you money.

MOST MILES PER DOLLAR

Firestone

GUM-DIPPED TIRES

AMERICANS SHOULD PRODUCE THEIR OWN RUBBER... Harvey S. Firestone

Zoning Notes

Prepared by Frank B. Williams

Author of "The Law of City Planning and Zoning"

From data collected by the Zoning Committee of New York (233 Broadway)

Single-Family Residence Districts Sustained by United States Supreme Court. See page 444 of this issue

Recent Zoning Ordinances

BRONXVILLE, N. Y.—Ordinance, February 12 and 22, 1927.

EAST HAMPTON, N. Y.—Ordinance, May 19, 1925.

Recent Zoning Decisions

UNITED STATES.—*Weiss v. Guin, District Court for Northern District of Ohio, Eastern Division*, March, 1927. The provisions for setback lines are within the police power. The lines in question are reasonable. The plaintiff cannot be heard with regard to the validity of the clauses of the ordinance not affecting him.

UNITED STATES.—The morning papers of March 15 announce a decision by the Supreme Court declaring a zoning ordinance in New Orleans, attempting to create residential districts from which colored people were excluded to be unconstitutional. The Court had decided the same question to the same effect some years ago in *Buchanan v. Warley* (245 U. S. 60). The supporters of the present ordinance urged that this ordinance, and present conditions, were so different that the Court should support the present ordinance. The Court, however, declined to do so, following the former case.

NEW YORK.—*In re Oppenheimer (Kraus), Supreme Court*, reported in *New York Law Journal*, February 25, 1927. A regulation purporting to force an owner to build to a specified height and make a greater use of his property than would otherwise be needful is esthetic, and is not a legitimate exercise of the police power.

NEW YORK.—*People ex rel. Fordham Manor Reformed Church v. Walsh, Court of Appeals*, February 23, 1927. In an application for a variance on the ground of practical difficulties or unnecessary hardships, the reasons for its existence must appear in the return. If the reason does not appear in the evidence, and is in the knowledge of the board of appeals, it must be stated. The fact that there is a garage next to the lot in question, in a residential district, is not in itself such a reason.

PENNSYLVANIA.—*In the Matter of Appeal of Liggett and Alpha Sign Company, Common Pleas*, October Term, 1926. The exclusion of an electric sign from a residential district is a valid exercise of the police power.

PENNSYLVANIA.—*In re Appeal of Yunge, Petition of Costello, Superior Court, Pennsylvania*, March 3, 1927. Provisions for side yards in one-family districts are within the police power. The owner of adjacent or nearby property is an interested party, and may intervene as such. The fact that the ordinance applies only to buildings erected or altered after its passage is not unlawful discrimination.

The statutory provision for a board of appeals is constitutional.

It is unnecessary to pass on clauses of the ordinance not affecting petitioner.

TENNESSEE.—*Spencer-Sturla Co. v. City of Memphis (Supreme Court)*, reported in *Baltimore Daily Record*, February 25, 1927. The company was maintaining an undertaking establishment in a "B" residence district, contrary to a comprehensive zoning ordinance of the city passed in accordance with a state enabling act (Private Acts, 1921, ch. 165).

Held: That the purposes of the act are sufficiently indicated in its caption, as required by the state constitution;

That the statute and the ordinance are a legitimate exercise of the police power;

That the exclusion of an undertaking establishment from a residential district is reasonable; and

That the company cannot urge the unreasonableness of other provisions of the ordinance, not affecting it, in this proceeding.

NOTE BY EDITOR.—With the exception of the case of *City of Memphis v. Gianotti*, decided March 29, 1924, which sustains a non-comprehensive ordinance in which junk-shops are excluded within a given district except by consent, and not generally reported, this is the first decision in Tennessee to pass on the constitutionality of zoning.

New Jersey Legislature Passes Constitutional Amendment on Zoning

The Mackay Resolution, adding a new paragraph to Article IV., Section 6 of the New Jersey Constitution in order to authorize zoning in that state, has been passed unanimously by both branches of the Legislature, and now awaits the approval of the people. The resolution reads as follows:

"The Legislature may enact general laws under which municipalities, other than counties, may adopt zoning ordinances limiting and restricting to specified districts, and regulating therein buildings and structures according to their construction and the nature and extent of their use, and the exercise of such authority shall be deemed to be within the police power of the state. Such laws shall be subject to repeal or alteration by the Legislature."

Zoning and Health

Dr. George M. Kober of the School of Medicine, Georgetown University, Washington, D. C., in the case of *U. S. ex rel. Stearman v. Oekman* in the Supreme Court of the District of Columbia, brought in defence of zoning in the District, gave most valuable testimony showing to what an extent zoning is a public health measure. The

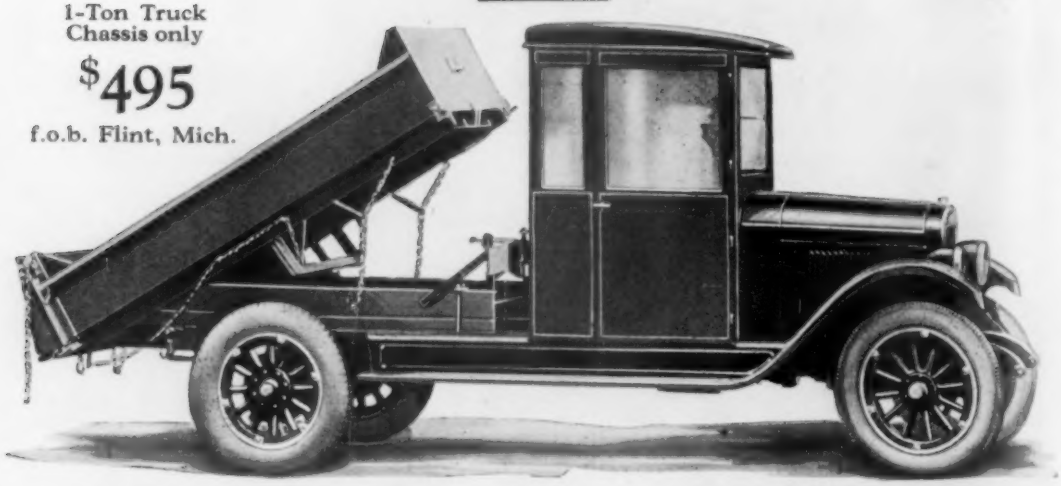
for Economical Transportation

CHEVROLET

1-Ton Truck
Chassis only

$495

f.o.b. Flint, Mich.



Quality Features of the world's most popular gear-shift truck!

Chevrolet is the world's most popular gear-shift truck because it offers, at amazingly low prices, scores of quality features not found on any other haulage unit in the low-price field.

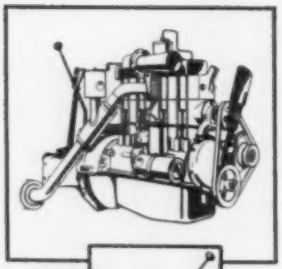
Included in this list are numerous recent improvements of the utmost importance, such as—AC oil filter and AC air cleaner; improved transmission; new gear-shift lever; new and more conveniently located emergency brake; crowned fenders; new radiator; new 17-inch steering wheel—and even bullet-type headlamps.

If you want the utmost in commercial transportation combined with true economy, see the nearest Chevrolet dealer.

CHEVROLET MOTOR COMPANY, DETROIT, MICH. Division of General Motors Corp

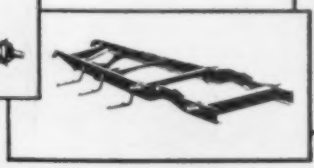
1-Ton Truck with Stake Body $680. 1-Ton Truck with Panel Bdoy $755. 1-Ton Truck Chassis Complete with Cab $610. 1-Ton Chassis $495. ½-Ton Truck Chassis $395.

All prices f. o. b. Flint, Mich. In addition to these low prices, Chevrolet's delivered prices include the lowest handling and financing charges available.

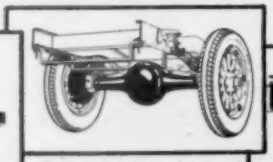


The famous Chevrolet valve-in-head motor has been made even more dependable.

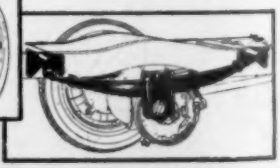
A modern, 3-speed transmission provides proper gear ratios for maximum power under every condition.



A husky, 6" channel steel frame is a contributing factor to the long life and faultless performance of Chevrolet Trucks.



The rugged Chevrolet rear axle possesses abundant strength and stamina for the heaviest haulage duty—giving faultless performance under every condition.



Heavy, extra-leaved, semi-elliptic springs—set parallel to the frame—effectively cushion the load and chassis against road shocks.

World's Largest Builder of Gear-shift Trucks

testimony was published in *The Nation's Health* for October, 1926, and has been republished as a leaflet.

Amended Rules of Board of Standards and Appeals of New York City

The Board on February 15, 1927, adopted a new set of rules, which is published in the issue of their bulletin dated February 22, 1927.

Reports of Zoning Boards of Appeal

The Board of Zoning Appeals of Akron, Ohio, has submitted to the Mayor its report for 1925, and also its report for 1926. The latter report shows that the number of appeals during the year was only 1.2 per cent of the total number of permits granted by the building inspector.

On February 23, 1927, the Zoning Board of Appeals of the city of Cincinnati, Ohio, also issued its report for 1926. The attendance of the membership at the meetings was 95.5 per cent, there being eighteen individual absentees at the eighty meetings called. This record of attendance made it unnecessary to dismiss a meeting because of the lack of a quorum.

The Cincinnati Zoning Board began to function on the 12th day of May, 1924, and has from its inception disposed of approximately 600 cases. In all these cases the decisions of the Board have been unanimous. Not one appellant to date has sought a review by the courts.

During the past year approximately one-half of the appeals granted were made subject to conditions. In these cases suggestions as to rearrangements have been made so that the modifications necessary were reduced to a minimum. Full compliance with the provisions of the ordinance was effected in most of the seventeen cases withdrawn.

During the year approximately 7,253 applications (exclusive of those dormant) were made to the Commissioner of Buildings for building permits, requiring hearings before the Board in 226 instances, or 3.10 per cent of the total building permit applications, of which 2.13 per cent were granted, 0.23 per cent withdrawn, and 0.74 per cent denied in the cases heard.

The total number of permits issued by the Commissioner of Buildings for the erection of strictly residence buildings during the year 1926 was 1,871. Of these, 1,477 were for single-family residences, 343 for duplex apartments, and 51 for apartment buildings.

The preponderance of permits issued for single-family homes indicates that the Residence "A" District provisions of the zoning ordinance are justified and wholly in keeping with the trend, customs, and desires of the inhabitants of this city. Zoning undoubtedly is a most important factor in the establishment of so large a number of single-family homes in Cincinnati.

Display Maps as a Means of Advertising City Planning Projects

IN a recent news letter of the City Planning Division of the American Society of Civil Engineers, the following suggestions are offered as to the display of city maps in public places:

"One of the members of the Executive Committee visited the city of Albany, N. Y., and found displayed in the Union Station a fine street map of the city. This was of much interest and value for the visit of a stranger. In very few of the thousands of cities in the United States is displayed a street map which could be of value to visitors and even to many residents and serve as a means of advertising the city engineer who drew it and placed it there.

"Where additions to the street system, street widenings, and extensions are proposed, especially of the thoroughfare system, splendid exploitation of these plans could be obtained in the railroad stations. It does not appear that city plan commissions have taken advantage of this most ready means of calling attention to their projects.

"Occasional examples are found on our highways of skeleton city maps placed on signboards for the guidance of the automobilist. Points should be chosen for the location of these where the stopping of automobiles will not impede traffic, and their number greatly increased.

"We are advised that in the post office in Sault Sainte Marie, Mich. ,there is displayed a map of the locality, which is of much interest to strangers who see it. There is no reason why a city plan should not be thus brought to public notice in the public building which is most visited by residents and strangers."

New Jersey Chamber of Commerce Secretaries Oppose Real Estate Booms

"RESOLVED: That the members of the Secretaries' Council, speaking as individuals and not purporting to represent the organizations with which they are severally connected, view with grave concern land promotion schemes which have the complexion of real estate booms and are solely for the purpose of inflating values, which promotion schemes tend to retard the legitimate development of the state, and we call this matter seriously to the attention of municipal authorities, financial institutions, the New Jersey Association of Real Estate Boards, and the New Jersey Real Estate Commission."

—A resolution adopted by the Secretaries Council of the New Jersey State Chamber of Commerce in convention at Camden, February 18, 1927.

GRAHAM BROTHERS TRUCKS

$670
¾-Ton Chassis F. O. B. Detroit

$1245
1½-Ton Chassis F. O. B. Detroit

$885
1-Ton Chassis F. O. B. Detroit

$1445
2-Ton Chassis F. O. B. Detroit
Dual Rear Wheels Optional at Same Price

Quality —
Volume —
Low Price

Ask your local Dodge Brothers dealer for the Vocational Book which features the use of trucks and commercial cars in your particular line of business.

SOLD BY DODGE BROTHERS DEALERS EVERYWHERE

The City's Legal Rights and Duties

Conducted by A. L. H. Street, Attorney at Law

A Contract "in Writing" Need Not Be Embraced in a Single Document

A statute requiring certain municipal contracts to be in writing is satisfied by the submission to the municipal authorities of a proposal and the acceptance of the same by them by written resolution, holds the Court of Common Pleas for Northampton County, Pennsylvania, in the case of Walz vs. Borough of Wilson, 18 Pennsylvania Municipal Law Reporter, 89.

Improperly Constructed Driveway May Be an Abatable Public Nuisance

The street grade being higher than the sidewalk grade, an abutting property owner constructed a driveway in such way that it was 7 inches higher than the sidewalk at their point of intersection, thereby obstructing the flow of water as well as interfering with pedestrian traffic. The Minnesota Supreme Court upheld the city's right to enjoin continued maintenance of the driveway at this elevation, on the ground that it constituted a public nuisance. (City of Marshall vs. Cook, 211 North Western Reporter, 328.)

Heavy Occupation Tax on "Fire Sales" Upheld in Georgia

An ordinance of the city of Augusta, Ga., imposes a license tax of $100 per week, or $200 per month on the business of conducting "fire, salvage, or wreck sales." Plaintiffs bought a stock of goods that had been damaged by fire, and unsuccessfully attacked the city's right to enforce the ordinance, pointing out that their predecessors had paid but $140 annually for the privilege of conducting the business before the fire occurred. But the Georgia Supreme Court decided (Shelnutt vs. City Council of Augusta, 136 South Eastern Reporter, 446) that the ordinance was a valid exercise of the city's power to make reasonable classification of businesses for the purpose of levying occupation taxes, and that the ordinance does not unduly restrain trade. Two of the Judges of the Court dissented from this decision, however, saying:

"The purpose of this ordinance is to prohibit such persons from conducting such sales in competition with local merchants, and thus stifle competition."

City's Power to Condemn Property Already Devoted to Public Use Must Be Clearly Expressed

At the instance of a single citizen, the city of Moultrie, Ga., undertook to extend a street across railway tracks. Claiming that establishment of the crossing would interfere with operation of an existing coal chute and operation of trains, the railway company sued to enjoin the city's condemnation proceedings. The trial judge ruled in favor of the city, but this ruling was reversed by the Georgia Supreme Court on appeal. (Georgia Northern Railway Company vs. City of Moultrie, 136 South Eastern Reporter, 415.) The Supreme Court followed this rule laid down in an earlier case:

"In order to authorize a municipal corporation to take, for the purpose of opening or extending streets, property already devoted to public use, the power must be conferred in express terms, or by necessary implication. A general power conferred by legislative enactment upon a municipal corporation 'to open new streets, change, widen, or to extend streets already opened, within the corporate limits,' does not expressly confer upon the municipality the authority to take and use for this purpose land already in use by a railroad company for purposes embraced within the provisions of its charter."

Under a governing statute, the Court added that defendant city had no power to condemn property right of the railway company in such way as to destroy or seriously impair the company's regular and effective use of its property.

Street Railway Company Unsuccessfully Attacks an Ordinance Fixing Fares

In the case of Lynchburg Traction & Light Company vs. City of Lynchburg, 16 Federal Reporter, 2d Series, 763, the company sued to enjoin enforcement of an ordinance of defendant city fixing a five-cent fare on certain lines of the company. The suit was based on a claim that the ordinance unconstitutionally impaired the obligation of contract rights of the company under franchises previously granted.

The railway company claimed that the ordinance nullified an order of the Virginia Corporation Commission allowing a six-cent fare. This claim, the Court holds, negatived any attempt to impair the obligations of a contract, because rates are fixed by the Commission, in the exercise of the police power, not through contractual relations.

To a further contention, that the ordinance, which purports to fix rates for service in newly annexed territory, impaired the obligation of existing franchises, the Court replied: "The franchises themselves do not attempt to bind the parties as to rates in the territory beyond the old city limits, and the mere fixing of rates for this outside territory, although possibly void on other grounds, could not be said to impair the obligations of a contract which had no reference to the matter."

"A municipal ordinance not sanctioned by the law of the state is not a law impairing the obligations of contracts within the impairment clause of the Constitution," adds the opinion. "And it is the law of Virginia that municipalities have now power, either under the Constitution or general statutes, to prescribe rates (as distinguished from the power to contract therefor) to be charged by any public service corporation. . . . It may well be that the ordinance is void because not based on legislative authority, but, if void for

Announcing the New Chain-Drive International Dump Trucks

Model 54-C—2½- to 3-yd. capacity, *140-inch Wheelbase*

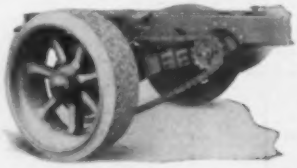
Contractors, and others with heavy material or excavation hauling to do, will find these new International trucks unusually interesting, from the combined standpoint of heavy-duty ability and low operating cost. Models 54-C and 74-C are designed especially for the heaviest dump truck work found in municipal and construction service.

In Model 74-C, in addition to the reduction gear drive, the live axle has a 2-speed range. When pulling out of deep pits, up a steep grade, or in unusually heavy going, the low range gives you a gear reduction of 86 to 1 in low first speed. When smoother going is reached a shift changes jack shaft speed to the high range, which gives a reduction of 63 to 1 in first speed and up to 10.6 to 1 in high speed, permitting maximum speed in delivering the load or running empty.

Model 74-C—4- to 5-yd, capacity, *154-inch Wheelbase*

These new trucks, with their background of quality manufacture and nation-wide service, will appeal to all users of dump trucks whose work is exceptionally severe. We suggest that you write for complete information on these two new chain-drive models, or the regular line ranging in capacity from ¾-ton to 5-ton. Also, McCormick-Deering Industrial Tractors for heavy work.

This view brings out some of the outstanding features of the International chain drive. Note the double steel channel frame, each section



¼-inch thick. The steel radius arm also includes the chain adjustment. The driving sprocket is carried on a large ball bearing.

INTERNATIONAL HARVESTER COMPANY
606 So. Michigan Ave. of America Chicago, Illinois
(Incorporated)

INTERNATIONAL HARVESTER TRUCKS COMPANY

that reason, it could not be said to be an act of the state impairing the obligation of a contract, for in such case it would not be the act of the state."

Municipality Has No Right to Sell Needed Property Not to Be Replaced, Unless Expressly Authorized

The commissioners of a town were enjoined by the Delaware Court of Chancery from selling a town hall, because there was no plan to provide another hall and because there was no express charter authority for the sale. (Drexler vs. Commissioners of Town of Bethany Beach, 135 Atlantic Reporter, 484.) But the Court recognizes that where it is proper to dispose of property owned by a municipality, the authorities have broad discretion in fixing the time and conditions of the sale. As to the right to sell the particular building, the opinion says:

"Now the town having thus emphatically impressed upon this property its character of public necessity and having devoted it to the use of the inhabitants, who for over ten years have enjoyed it, it seems to me that the holding of it by the town must be regarded as in trust and for the benefit of the inhabitants. If such is the case . . . the right to sell does not exist in the absence of an express grant of power from the Legislature. If the public had ceased to use the hall, or if it had been abandoned, or if the sale were simply an incident in connection with the establishment of a new hall elsewhere, the case would be a different one."

City Cannot Escape Liability for Defect in Street on Theory That Defect Was Caused by Negligence in the Maintaining of Its Sewer System

A century or so ago, an English miller was prosecuted for removing earth from a roadway, causing a pool to form and drowning a traveler therein. He interposed the novel defense that the roadway afforded the only kind of material that would meet his needs. Our recollection is that the Court treated this as a mitigating circumstance rather than as a complete defense.

The instance is brought to mind by the case of Robertson vs. City of Atlanta, 135 South Eastern Reporter, 445, lately decided by the Georgia Court of Appeals. In that case it appeared that part of the city's sewer system had been known to have disintegrated and was condemned. But it did not appear to have been known that a street had become so undermined by this condition as to leave a mere shell of street surface covering a cavity at least 20 feet square and 15 or more feet deep, until plaintiff and his companions in his automobile broke through the shell and dropped with the car into the cavity.

To plaintiff's suit for damages, the city pleaded that even if it was negligent in the premises it was not liable, because the negligence pertained to the performance of a purely governmental function—maintaining a sewer. But the Court said:

"The general rule is that a municipal corporation is bound to keep its streets in a reasonably safe condition for travel by the ordinary modes, and will be liable for damages for injuries sustained in consequence of its derelictions in this regard, no matter by what cause the street may have become defective and unsafe, where the city knew, or should have known, of the defect in time to repair it or to give warning of its existence. . . .

"Irrespective of whether a municipal corporation is exercising a 'governmental function' in allowing a part of its sewerage system to become worn and in a bad state of repair, where a traveler upon a public street in a city was injured in consequence of a dangerous condition under the surface of the street, of which the city knew, or should have known in time to repair it, or to have given warning of its existence before the injury, the city cannot escape liability upon the ground that such condition of the street was due to its failure to repair its sewerage system."

City Not Liable for Defects in a City Hall-Opera House Building Used in Its Governmental Capacity

A city owned and operated a building on the second floor of which was an opera house rented by the city for profit. A broad stairway leading to the second floor darkened the approach to municipal offices on the first floor. A taxpayer visiting the building on public business was injured through the defective condition of such approach. Because the injury arose in the use of the building in its governmental capacity, the North Carolina Supreme Court decided that the city was not liable for the accident. (Pleasants vs. City of Greensboro, 135 South Eastern Reporter, 321.)

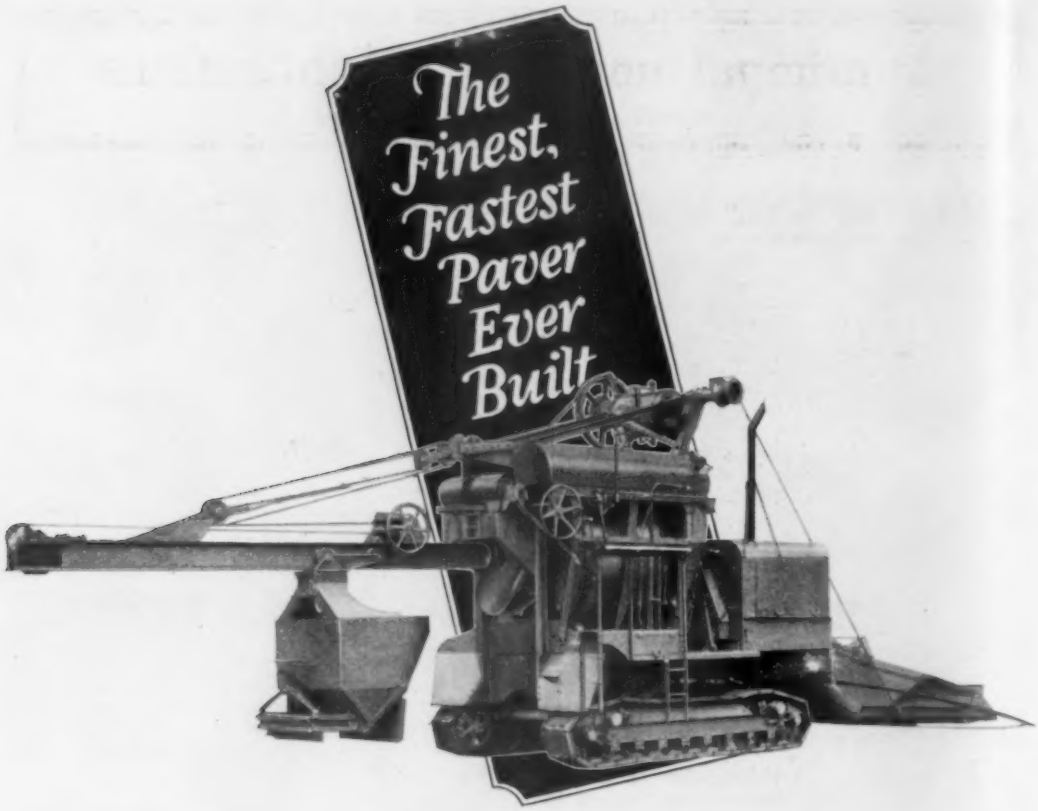
Counsel for plaintiff argued that the principle that a city is not liable for negligence in the performance of a governmental function is a "relic of the days of the divine right of kings"; that there is no valid reason why a municipality that has been guilty of an act for which a private corporation would be liable should not be required to compensate the injured party. But the Court disposed of that contention on the very reasonable ground that since the principle of immunity from liability has been long recognized, it is only just that it be adhered to until the people exercise their power to abrogate the rule by a statute or constitutional provision declaring that there shall be liability in such cases.

An Unaccepted Dedication of Land to Park Purposes Does Not Bind the Owner

From the report of the case of Irwin vs. McAden, 136 South Eastern Reporter, 368, decided by the North Carolina Supreme Court, it appears that a landowner offered to dedicate a tract to the city of Charlotte for park purposes, but that the dedication was never accepted and the land was never so used. Inadvertently, a recorded map covering the tract and other lands indicated that the park existed. Holding that there was no dedication, the Court said:

"There are decisions which hold that, where the owner lays his land off into lots and streets with a view to making sales in reference to them, and causes a plat or map of the lots, streets, alleys, and parks to be registered, and executes deeds referring to the map as a part of the description, he thereby dedicates the streets, alleys, and parks to the use of those who purchase the lots, and under some circumstances also to the use of the public. . . .

"A dedication is never complete until acceptance; neither burdens nor benefits with attendant duties may be imposed upon the public, unless in some proper way it has consented to assume them; and until acceptance is established it should be termed a revocable offer of dedication."



"Goodbye Yesterday—Hello Tomorrow"

Heat-Treated Blades, Buckets, Chute

defeat the abrasive wear of mixing—and preserve Rex speed throughout the season.

8-Second Discharge

provides original Rex high-speed action in the Rex 70 second cycle.

Governor Booster

speeds up the engine and the drum when the skip starts up—charging and discharging are faster.

6-Cylinder Engine

smothers the vibration common to many mixers—or you can get the Waukesha 4-cylinder job.

FOR 1927, Rex has built a *New* and *Even Greater* 27-E—a paver that takes one more long step away from "yesterday"—towards "tomorrow." This New Rex is built on the idea that a paving mixer should be real machinery. And it is built to give the contractor even more yards per day—for even more seasons. On these two points—and the lower-per-yard-costs that they produce—the New Rex holds an inviting story for you. Check the side columns for a few of the reasons why. And check the *1927 Rex Paver Catalogue* for the rest. If you're interested in new and better paver performance—send for your copy today.

Timken Bearings

in the speed reduction, drum rollers and other bearings reduce friction and upkeep.

7-Second Water

stops mixing penalties and water hold-ups—and it's accurate to the pound.

Unit Power Plant

incorporates engine and speed reduction into one compact high-speed unit.

Unified Action

can add 40 minutes to the paving day by handling charging and discharging at one time.

CHAIN BELT COMPANY, *767* Park Street, Milwaukee

REX PAVERS

When writing to Advertisers please mention THE AMERICAN CITY—Thank you.

Municipal and Civic Publications

Prices do not include postage unless so stated

Guiding Principles of Public Service Regulation: Volume III.—By Henry C. Spurr, Editor, Public Utilities Reports. Public Utilities Reports, Inc., Rochester, N. Y. 1926. CXXVI + 919 pp. $10.00.

Whereas the preceding two volumes of this series by Mr. Spurr were concerned chiefly with the jurisdiction and powers of commissions and courts, and with valuation, depreciation, and operating expenses, this volume, after dealing with the rate of return and factors affecting it, including attraction of capital and rewards for efficiency, takes up in detail the subject of rate schedules and the considerations peculiar to rates for specific kinds of utilities. The book, like its companion volumes, follows a modified case-book method, being an exhaustive summary and classification of court and commission findings, with interspersed comments, chiefly analytical, by the author of the compilation, rather than an original, critical, and philosophical discussion. The table of cases cited contains some 4,000 titles (including duplications). The great bulk of these are found in Public Utilities Reports, comprising some three score and ten volumes in the last twelve years, of which Mr. Spurr is the editor; and the substance of the book under review has appeared as editorial matter in the fortnightly advance sheets of P.U.R. during 1926.

Studies in Means of Financing Rapid-Transit Lines by Special Assessments and Otherwise.—Part II of the Report of the North Jersey Transit Commission to the Senate and General Assembly of the State of New Jersey. February 10, 1927. 91 pp. (with 15 tables and 7 plates) of the report, which has 281 pp. The letter of transmittal of this part of the report is signed by Philip H. Cornick, specialist in taxes and assessments. The changing methods of transit finance are discussed in the first chapter, showing the relative advantages and disadvantages of public and private ownership and the divergent theories regarding the terms of capital issues in public and private finance. Chapter II is devoted to a study of benefit assessments in many specific undertakings, and shows what is essential in applying this method to rapid-transit financing in New Jersey, while the third chapter presents studies of local benefits conferred by existing transit lines in New Jersey, and the final chapter of this part of the report analyzes the probability of local benefits from future transit lines. (Apply to H. Hatcher, Secretary of the Commission, Jersey Journal Building, Jersey City, N. J.)

Salaries That Prevail in the Fire Department in Cities Throughout the United States and Canada, January 1, 1927.—In the February, 1927, *International Fire Fighter*, official organ of the International Association of Fire Fighters. 8 pp. of tables. Giving for 393 cities, the salaries of chief, assistant chief, district chief, captains, lieutenants, firemen in first, second, and third years and for the maximum, master mechanics, engineers, chaffeurs, electrician, fire-alarm operator, and secretary to chief; also the number of men in the department and the population of the city. (Apply to the magazine, Room 106, A. F. of L. Building, Ninth Street and Massachusetts Avenue, Washington, D. C.)

Ten Years' Progress on the City Plan of Saint Louis, 1916-1926.—Also including the Annual Report of the City Plan Commission for 1925-1926. Published by the City Plan Commission, 201 Municipal Courts Building, St. Louis, Mo. February 1, 1927. 68 pp. Views, diagrams, and folding map of major street plan. An interesting and attractive presentation of the planning accomplishments completed and in progress as to streets, transit, transportation, public recreation, zoning, civic art, and miscellaneous undertakings. The entire major street plan of St. Louis has reached a stage of execution which is stated to provide for greater freedom of traffic circulation and movement than that of any other large city. It will have a total estimated cost of $32,000,000 for completing about one hundred projects of varying character throughout the city's area of 62 square miles. (Apply to the Commission.)

Notes on Municipal Home Rule Provisions in State Constitutions.—By Frederick Rex, Municipal Reference Librarian, Chicago. A compilation prepared at the request of the Chicago City Council Committee on Judiciary. It consists of some general observations; the home-rule provisions of the constitutions of Ohio, Michigan, Oklahoma, Oregon, New York, Pennsylvania, Wisconsin; extracts from the City Home Rule Law of New York; the home-rule constitutional provision recommended by the Committee on Municipal Program of the National Municipal League; and quotations from certain works on municipal government. January, 1927. 12 mimeographed pages. (Apply to Municipal Reference Library, 1005 City Hall, Chicago.)

Proceedings of the 29th Annual Meeting of the American Society for Testing Materials.—Two books comprising Volume 26 of the annual Proceedings of the Society, and reporting the annual meeting held in June, 1926. Part I (1,204 pp.) contains annual addresses and reports, including committee reports, with discussions thereof, on ferrous and non-ferrous metals, cement, ceramics, concrete, gypsum, lime, preservative coatings, petroleum products, road materials, coal and coke, timber, waterproofing materials, metallography, methods of testing and nomenclature and definitions; 105 tentative standards are printed which either have been revised or are printed for the first time. Part II (691 pp.) contains 48 technical papers with discussions, presenting results of expert investigations relating to metals, cement and concrete, paint, rosin, testing apparatus, the stability of bituminous mixtures, etc. Per part, $6.00 (paper), $6.50 (cloth), $8.00 (half-leather). (Apply to the Society, 1315 Spruce Street, Philadelphia, Pa.)

88 Successful Play Activities.—Suggestions for conducting special play activities in which the competitive element may be introduced. Published by the Playground and Recreation Association of America, 315 Fourth Avenue, New York. 1927. Handy size. 120 pp. Diagrams. Full directions. All the activities have been tried in various communities and have been found of absorbing interest to youngsters, the Association announces. "Many of them, such as bird-house building, Wagon Day, doll villages, lantern parades, and model boat racing, give boys and girls an opportunity to show their creative power." There are detailed descriptions of kazoo bands, Circus Day, miniature golf courses, pet shows, soap sculpture, and whistling contests. The handbook has been designed to help playgrounds, schools, boys' and girls' clubs, Sunday schools and other institutions to turn youthful energies into happy and useful channels. 60 cents. (Apply to the Association.)

Roads.—A list of publications relating to this subject for sale by the Superintendent of Documents, Washington, D. C., December, 1925. Covering construction, improvement, and maintenance. 8 pp. This is Price List No. 45. (Apply to Superintendent of Documents, Government Printing Office, Washington, D. C.)

Paris Green Applied by Airplane in Mosquito Control.—By L. L. Williams, Jr., Surgeon, United States Public Health Service; and S. S. Cook, Lieutenant Commander, Medical Corps, United States Navy. 22 pp. in *Public Health Reports* for February 18, 1927. This is the report of mosquito control by Paris green dusting at the marine barracks at Quantico, Va., in 1926. The dusting was effective against the Anopheles mosquito in all types of vegetation, from open marsh to densely wooded swamp, the effective quantity of Paris green being one pound per acre. 5 cents. (Apply to Government Printing Office, Washington, D. C.)

Crime Prevention and Crime Repression.—The February *Bulletin* of the Russell Sage Foundation Library consists of a selected bibliography, representing recent material only, with a few exceptions, on the above subjects. 4 pp. 10 cents. (Apply to the Library, 130 East 22d Street, New York.)

Too old to learn? Not this group of 525, who recently attended an Association Short Course in San Francisco.

Inspecting samples of sand at one of the Short Courses

IN response to many demands from all over the country, the Portland Cement Association established, almost two years ago, a series of Short Courses in Design and Control of Concrete Mixtures. Ten courses were held in 1925, with 1,316 in attendance; in 1926, forty-six courses were attended by 10,775.

These courses, usually conducted in co-operation with educational institutions or engineering societies, are attended by architects, draftsmen, engineers, contractors, inspectors—in fact, by all grades and classes of men in the architectural, engineering and building professions. Schedule of March and April courses is given at the left.

Those desiring information, including detailed outline of the courses and local place of meeting, are invited to write Portland Cement Association, Chicago.

Schedule of Short Courses in Design and Control of Concrete Mixtures

March and April, 1927

CITY	DATE
Joplin, Mo.	Feb. 28 to Mar. 12
Duluth, Minn.	Mar. 8, 9 and 10
Norfolk, Va.	Mar. 8, 9 and 10
Harlingen, Tex.	Mar. 14, 15 and 17
Washington, D. C.	Mar. 16, 17 and 18
A. & M. College, Tex.	Mar. 18
Wichita Falls, Tex.	Mar. 21, 22 and 24
Raleigh, N. C.	Mar. 22, 23 and 24
Amarillo, Tex.	Mar. 28, 29 and 31
Columbia, S. C.	Mar. 29, 30 and 31
Ashville, N. C.	Mar. 29, 30 and 31
Lubbock, Tex.	Apr. 4, 5 and 7
Augusta, Ga.	Apr. 5, 6 and 7
Roanoke, Va.	Apr. 5, 6 and 8
Abilene, Tex.	Apr. 11, 12 and 14
Jacksonville, Fla.	Apr. 12, 13 and 14
Miami, Fla.	Apr. 19, 20 and 21
Tampa, Fla.	Apr. 26, 27 and 28

PORTLAND CEMENT *Association*

Concrete for Permanence CHICAGO

State and Local Taxation.—Referendum No. 49 of the Chamber of Commerce of the United States of America on the Taxation Committee's Report on State and Local Taxation. October 23, 1926. The report is printed, page by page, alongside the arguments against the recommendations of the Committee, and contains a ballot to be used by member organizations in voting upon the eleven recommendations of the Committee. The appendices contain tables on various details of Federal, state, and local taxation and state and local indebtedness. 52 quarto pp. (Apply to the Chamber, Washington, D. C.)

Taxation in Wisconsin.—A report by the Committee on Taxation of the City Club of Milwaukee. March 1, 1927. 15 pp. Study of the various divisions of the subject has led the Committee to the conclusions that taxes in Wisconsin are not too high as a whole; that reduction could come only through curtailing governmental activities; that there are inequities in the distribution of the tax burden; and that, even with the improvements recommended, a permanent and satisfactory system can be found, if ever, only after thorough revision resulting from studies made by a properly constituted and impartial body. (Apply to Charles F. Sammond, Chairman of the Committee, Milwaukee, Wis.)

A Picture of the Region (Philadelphia).—Published by the Regional Planning Federation, The Philadelphia Tri-State District, 901 Insurance Company of North America Building, Philadelphia, Pa. A clear and well-illustrated presentation of the program of the Federation for lessening waste, discomfort, and loss by far-sighted planning of the region as a whole and by the coordinated action of the communities involved. The first step toward the realization of the program is taken in the publication of this series of charts and maps with explanatory comment showing the basic facts about the region: population growth and distribution; political subdivisions; circumferential highways and the highway system; parks and playgrounds; streams and waterways; transportation; sewerage and drainage district; commutation facilities; water-supply; and building codes and zoning. (Apply to Howard Strong, Secretary-Director of the Federation, at the address above.)

Automobile Green Book—Volume 2, 1927.—Published by Scarborough Motor Guide Co., Boston, Mass. XVI + 1,043 pp. Many maps. $3.00.

This volume of the Road Reference and Tourists' Guide covers New York, New Jersey, Pennsylvania, Maryland, and Delaware, the Central, South Atlantic, and Gulf States, with trunk lines covering New England and eastern Canada. It is the Official Guide Book of the New York State Automobile Association. It presents routes aggregating over 100,000 miles of charted roads, illustrated by sixty pages of sectional maps and a hundred or more city maps, besides the folding key map and trunk line distance chart. The state and Federal highway systems are listed, and the connecting route numbers at the end of each route are given. The Golf Club Guide lists alphabetically by cities and towns all the golf and country club courses in the territory covered. The ferry schedules, the abstract of automobile laws, and the hotel garage information given add to the user's convenience.

Philadelphia's Government.—An organization chart and description prepared by the Bureau of Municipal Research of Philadelphia, Edward Thurber Paxton in charge of the work. It is a second and revised edition. 1926. 41 pp. + chart. (Apply to the Bureau, 311 South Juniper Street, Philadelphia, Pa.)

Regional Planning Progress in the Region of Chicago.—Published by the Chicago Regional Planning Association, Burnham Building, Chicago, Ill., January 1, 1927. 11 quarto pp. This report defines the Region of Chicago, states the purposes and methods of the Association, and gives the personnel, procedure, accomplishments, and program for 1927 of the Committees on General Surveys, Subdivision Plats and Zoning, Highways, Airways, Parks and Forests, Public Health, Legislation, Drainage, Sanitation and Water-Supply. (Apply to the Association.)

Financial Statistics of States: 1925.—The annual report of the Bureau of the Census on financial statistics of states, showing for the fiscal year 1925, for the 48 states, the financial transactions, the assessed valuation, taxes levied thereon, and indebtedness and specified assets. 131 pp. 20 cents. (Apply to Government Printing Office, Washington, D. C.)

Planning the New York Region.—A comprehensive report on the progress of the Regional Plan of New York and Its Environs. It contains a review of the organization, scope, and progress of the Regional Plan, a statement of underlying principles, and a complete summary of studies made since the inception of the work of the Committee. 136 pp. Illustrated. Paper, 75 cents; cloth, $1. (Apply to the Regional Plan of New York and Its Environs, 130 East 22nd Street, New York.)

National Association for the Advancement of Colored People.—Annual Report for 1926. The work of the Association includes anti-lynching propaganda, and the financing of Supreme Court cases arising out of segregation and other civil rights issues. 50 pp. (Apply to the Association, 69 Fifth Avenue, New York.)

Municipal Statistics of the Province of Quebec, Canada, for the Year 1925.—Printed in both English and French. 489 pp. (Apply to the Bureau of Statistics, Provincial Secretariat, Quebec, Que.)

Housing in Canada.—Housing in Relation to Land Development. Number I of the studies on Housing in Canada by the Research Committee of the Social Service Council of Canada. A monograph by A. G. Dalzell, M.E.I.C., who was for ten years Assistant City Engineer of Vancouver, B. C., later assistant to the Town Planning Adviser of the Dominion Government, and for six years has been a consulting engineer in Toronto, giving special attention to housing and town planning. He points out that bad housing results from an unsound policy of land development; that the only hope of securing better housing at reasonable prices is by securing a reduction in the cost of the land and its improvement; and that this can be done in Canada if new methods are adopted. The present housing conditions are thoroughly described and greatly deplored, and it is emphasized that besides attention to the building by-laws and to the construction of buildings for comfort in severe weather, there must be enforcement of adequate zoning and housing laws to protect dwellings as to their surroundings. The appendixes give information about the housing project of the Federal Government in Canada. 40 pp. (Apply to the Social Service Council of Canada, 309 Metropolitan Building, Toronto 2, Ontario.)

The University of Denver Stadium.—By J. L. Bingham. Reprinted from *The Athletic Journal*, January, 1927. 2 quarto pp. Illustrated. This stadium was designed by Gavin Hadden, civil engineer, of New York City. The most distinctive feature of the stadium is the shape produced by cutting off the rising tiers of seats by the curved exterior wall. The curve is centered on the center of the football field and includes the most desirable seats for football games. The advantages of this and other features of the design are explained. The stadium is built principally of reinforced concrete. (Apply to Gavin Hadden, 607 Fifth Avenue, New York.)

Designs for a Town Hall and for a Pavilion in a Park.—Reproductions, in the February *Bulletin* of the Beaux-Arts Institute of Design, of the thirteen designs obtaining first mention in a competition for the design of a memorial town hall for an incorporated village; and of the fourteen obtaining first mention in a competition covering a pavilion in a private park for sheltering a spring and serving as a resting place. (Apply to the Institute, 126 East 75th Street, New York).

Education Law of the State of New York.—University of the State of New York Bulletin, No. 866, December 15, 1926. Contains the text of the constitutional provisions relating to education; Article XI (Education Department) of the State Departments Law as amended, effective January 1, 1927; and the Education Law, as relating to the administration of the public schools generally, and as amended to July 1, 1926. Indexed. 436 pp. (Apply to The University of the State of New York Press, Albany, N. Y.)

Raising Model Cities Upon the Ruins of Disaster.—By James Ford. An article in two parts, appearing in *The Red Cross Courier* for February 1 and 15, 1927, devoted to the opportunities for systematic reconstruction after extensive destruction in cities as a result of earthquake, conflagration, or other disaster. Particular emphasis is placed on plans and results in Santa Barbara, Baltimore, and Salem, Mass. (Apply to American National Red Cross, Washington, D. C.)

CLETRAC
Crawler Tractors

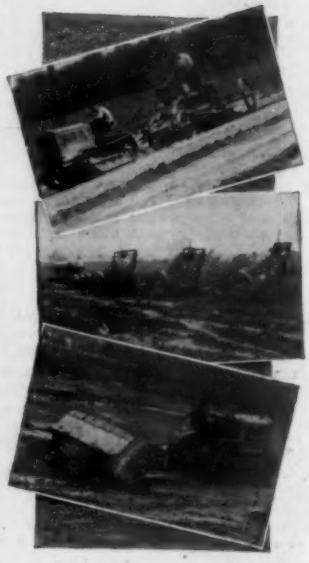
MORE power, greater traction, easier handling, less servicing—these four big Cletrac features are time savers and money makers for the men who build and maintain America's highways. No other tractor develops such power per pound of weight. No other moves with greater sureness over difficult footing. No other maneuvers more easily—or requires so little mechanical attention. Cletracs are thoroughly lubricated—*at the push of a plunger.* No "time out" is required for this important job.

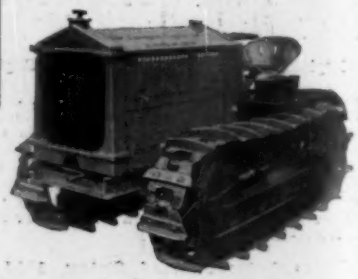
Road Construction and Maintenance—at Lowest Cost Per Yard, Per Mile, Per Hour

Cletrac speeds up highway work—and cuts costs all along the line. Its superior power and traction enable it to handle the most difficult equipment and the heaviest loads.

If you are contemplating the purchase of a tractor, do not fail to see the Cletrac *four-cylinder "20 K"* or the *six-cylinder "30 A."* Mail the coupon for literature or arrange with us for a demonstration in your locality.

The Cleveland Tractor Co.
CLEVELAND, OHIO





The Cleveland Tractor Co., Cleveland, Ohio.
Please send me full information regarding
☐ Model "20 K" Cletrac } For Road Work
☐ Model "30 A" Cletrac }
Name .....
Address .....

American Agricultural Villages.—By Edmund deS. Brunner, Gwendolyn S. Hughes, and Marjorie Patten. George H. Doran Company, New York. 1927. XXIII + 326 pp. Charts and maps. $3.50.

This volume of the American Village Studies of the Institute of Social and Religious Research interprets information regarding 140 villages in the United States —places of between 250 and 2,500 population in farming areas toward which they act as service stations. An interesting, exceedingly readable presentation of conditions as to agriculture, community structure, farm service, schools, churches, social organizations, public health, local government, and prosperity. In the appendices is found considerable material which makes clear the methods of work in preparing this study, and there are also many tables giving additional data for reference.

Rural Community Organizations Handbook.—By J. H. Kolb and A. F. Wileden. Bulletin 384 of the University of Wisconsin Agricultural Experiment Station, Madison, Wis. June, 1926. 92 pp.

This handbook briefly outlines forms of local rural organizations and describes ways and means by which they can serve their communities. Emphasis is placed on a fuller social life for the group or district served. The booklet is packed with specific constructive suggestions and recommendations. After outlining types of community organizations, how to get organizations of the right kind, and certain essentials for success, various kinds of programs and activities are described, with sections on Community Music, Community Drama and Pageantry, Literary Work and Debate, Holidays and Festivals, Community Picnics and Field Days, Community Play Days, Social Parties and Group Games, Community Athletics, Community Fairs, Community Health and Welfare, and Community Buildings and Parks. Lists of source materials and a topical index are provided.

Employment Statistics for the United States.—By Ralph G. Hurlin, Director of the Department of Statistics, Russell Sage Foundation; and William A. Berridge, Associate Professor of Economics, Brown University. Russell Sage Foundation, New York. 1926. IX + 215 pp. $2.50. Reviewed by David C. Adie, Secretary, Charity Organization Society, Buffalo, N. Y.

Governmental officials—city, state and federal, managers of industrial establishments and all interested in community development, ought to welcome this book. Every page speaks of careful and intelligent workmanship. The title alone is somewhat misleading. The book embodies a plan for the national collection of employment data recommended by the Committee on Governmental Labor Statistics of the American Statistical Association. Sources of data, the method of collection and the extent to which it can be used are clearly set out. Periods of unemployment have always revealed chaos. The President's Conference on Unemployment in 1921 only gave emphasis to this. The recommendations embodied in this volume ought to enable us to take a great forward step. It is not, however, merely as a means of combating the evils of industrial depression that we need employment information. The everyday planning of economic factors necessitates the existence of reliable data. The charts are excellently done.

Public Health Methods.—Two papers: Present and Ideal Methods for the Control of Municipal Milk Supplies, by N. O. Gunderson, M.D.; Present and Ideal Methods and Unit Cost of Venereal Disease Control, by Walter Milhelmj, M.D. Read before the annual conference of Illinois Health Officers, Springfield, December 3, 1926, and given in *Illinois Health News*, February, 1927. (Apply to Department of Public Health, Capitol Building, Springfield, Ill.)

Sewage Disposal and Water Supply of Farmsteads and Country Estates.—By Dr. William Paul Gebhard, C.E. Two brochures in one, the first, consisting of 12 pages, taking up briefly the various methods of disposing of the sewage of a country household, particularly of the isolated type usual in the United States. It is stated that the introduction of a running water-supply is frequently not accompanied by adequate disposal methods. Four general systems are discussed, including dry disposal, and specific recommendations are made. The second brochure, of 24 pages, deals with water-supply for similar households; after treating general considerations, it goes into such topics as supply, from lakes, streams, springs, wells, and rain-water; gravity and pumping systems; storage facilities; pumping machinery and operation; and water distribution. 25 cents. (Apply to the author, Scarsdale, N. Y.)

Forest Preserve District of Cook County, Ill.—Annual Message of Anton J. Cermak, President of the Board of Commissioners of the Forest Preserve District of Cook County for the year 1926. 29 pp. Illustrated. There are now four golf courses in the District, and a number of cleared tracts for landing fields. Tourist camps with modern equipment have been built, and log cabins for the American Legion and the Boy Scouts. There is to be a great new zoological park at Riverside. New playgrounds for children have been located, a polo field put in at Glencoe, and 20,000 trees distributed throughout the Preserves, and many other improvements have been made. (Apply to the Board, Chicago, Ill.)

Thorough Medical Examination Proposed for School Children.—By Edwin F. Patton, M.D., Orthopedic Hospital School, Los Angeles, and Richard A. Bolt, M.D., D.P.H., Assistant Professor of Child Hygiene, University of California. An article in *The Nation's Health*, February, 1927, advocating one complete survey in several years, instead of several superficial yearly inspections, to determine unfavorable condition causes and direct correction efforts. (Apply to The Modern Hospital Publishing Co., 22-24 East Ontario Street, Chicago, Ill.)

Port Handbook of New Orleans (Desk Edition).—An attractively gotten-up booklet describing the organization, functions, accomplishments and activities of the Board of Commissioners of the Port of New Orleans, well provided with illustrations, charts and maps. December, 1926. 55 pp. + 9 plates. (Apply to the Board, 200 New Orleans Court Building, New Orleans, La.)

Proceedings of the 19th Annual Meeting of the Assembly of Civil Service Commissions.—A report on the annual meeting at Philadelphia in September, 1926, including text of addresses and papers, with discussions thereon, and round-table discussions of experience rating and promotion examinations. A "Civil Service Map" showing the extent of civil service jurisdiction in the United States is at the end of the booklet. XIII + 161 pp. (Apply to the Secretary of the Assembly, Charles S. Shaughnessy, Civil Service Commission, Philadelphia, Pa.)

Annual Report, Police Department, City of Houston, Texas, 1926.—A handsome mimeographed report, verbally very colorful, and with many statistics comparing 1926 with 1925 and earlier years. 49 pp. (Apply to the Department.)

Annual Report of the City Manager, Berkeley, Calif.—A well arranged, printed and illustrated booklet, which includes the report of the City Auditor as well as the City Manager, for the fiscal year ended June 30, 1926. 77 pp. (Apply to City Manager.)

Annual Report of The State Board of Public Welfare of South Carolina, 1926.—This contains statements of personnel, functions and accomplishments; recommendations to the General Assembly; chapters on investigations, licensing of institutions and agencies, indeterminate sentences, the child-placing bureau, and other administrative aspects of the Board's work; inspection reports, statistics and a financial statement. 95 pp. (Apply to the Board, Columbia, S. C.)

Other Reports Received

BALTIMORE COUNTY, MD.—Annual Report, Metropolitan Sanitary District, year ending April 30, 1926.

BOSTON, MASS.—Annual Report, City Planning Board, 1925.

COOK COUNTY, ILL.—Annual Message of President of Board of Commissioners, 1926.

COOK COUNTY, ILL.—Charity Service Reports, 1925. Send 15 cents for mailing, to Municipal Reference Library, 1005 City Hall, Chicago, Ill.

KALISPELL, MONT.—Annual Report, Water Department, 1926.

MOUNT DESERT, ME.—Annual Report, Town Officers, year ending January 30, 1927.

NEW YORK STATE.—Annual Report, Tax Commission, 1925.

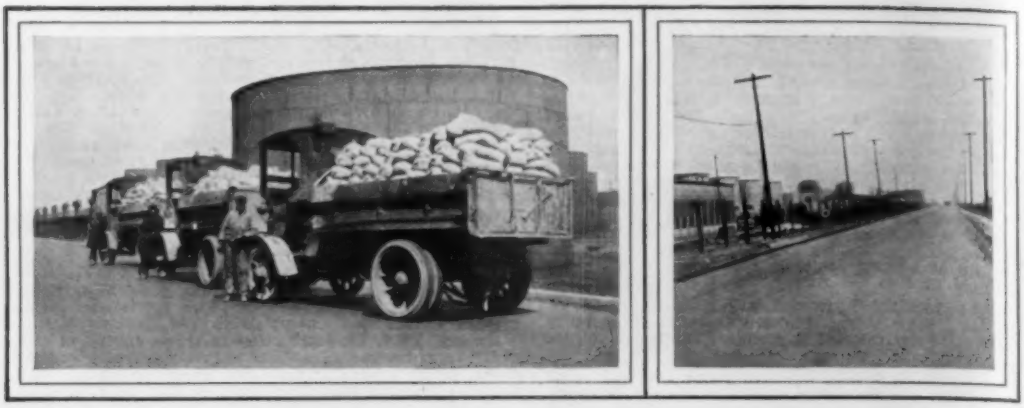
OBERLIN, OHIO—Annual Report of the Village, 1926.

PASADENA, CALIF.—Annual Report, Water Department, 1926.

SALEM, MASS.—Annual Report, Park Department, 1926.

WESTERVILLE, OHIO.—Annual Report, City Manager, 1926.

WILMINGTON, DEL.—Annual Report, Board of Water Commissioners, 1925-1926.



STANDARD AVENUE, WHITING, INDIANA, is a very heavy traffic road. It is one of the main arterial highways into Chicago, and is the route by which cement is shipped to Chicago, by motor truck, from Buffington, Indiana.

Standard Avenue was first paved in the fall of 1918, using Stanolind Paving Asphalt as a cement on a Portland Cement Concrete base. An inch and a half binder course and a wearing course of two inches were laid, making a total of three and one-half inches of asphalt.

The roadway gave excellent service under this heavy traffic for eight years. In the summer of 1926 a few defects appeared in the surface of the pavement in the form of cracks and holes.

The holes were patched and the entire surface given a light surface treatment with Stanolind Cut-Back Asphalt for Surface Treatment, applied cold. This being a sheet asphalt pavement, a light surface treatment is considered very difficult to apply.

Photograph No. 1 shows the pavement when it was first laid in 1918, and also shows a sample of the traffic it bears.

Photograph No. 2 shows the pavement seven months after the cold surface treatment had been applied. It will be noted that it is in as good condition as when first opened to traffic in November, 1918.

STANDARD OIL COMPANY

(INDIANA)

General Offices: 910 S. Michigan Ave. **Chicago, Illinois**

ILLINOIS
Chicago
Decatur
Joliet
Peoria
Quincy

INDIANA
Evansville
Indianapolis
South Bend
KANSAS
Wichita

IOWA
Davenport
Des Moines
Mason City
Sioux City
S. DAKOTA
Huron

MICHIGAN
Detroit
Grand Rapids
Saginaw
N. DAKOTA
Fargo

Minot
WISCONSIN
La Crosse
Milwaukee
MINNESOTA
Duluth

Mankato
Minneapolis
Kansas City
St. Joseph
MISSOURI
St. Louis

Conventions—When and Where

APRIL 13-15.—KANSAS CITY, MO.
Central States Safety Congress. Address: National Safety Council, 168 North Michigan Avenue, Chicago, Ill.

APRIL 15.—NEW YORK CITY.
National Highway Traffic Association. Annual meeting. Secretary, Elmer Thompson, 12 East 53rd Street, New York.

APRIL 25-27.—CHATTANOOGA, TENN.
Southern Commercial Secretaries Association. Annual convention. Secretary, J. A. Gawthorp, Greensboro, N. C.

APRIL 26-28.—JACKSON, MISS.
Southeastern Water and Light Association. Annual convention. Secretary, W. F. Stieglitz, Columbia, S. C.

MAY 2-5.—WASHINGTON, D. C.
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, 1615 H Street N. W., Washington, D. C.

MAY 9-11.—WASHINGTON, D. C.
American Child Health Association. Annual meeting. Secretary, Dr. Philip Van Ingen, 370 Seventh Avenue, New York.

MAY 9-11.—DES MOINES, IOWA.
International Association of Policewomen. Annual convention. President, Mrs. Mina C. Van Winkle, Washington, D. C.

MAY 9-11.—WASHINGTON, D. C.
National Conference on City Planning. Annual conference. Secretary, Flavel Shurtleff, 130 East 22nd Street, New York.

MAY 9-12.—CHICAGO, ILL.
National Fire Protection Association. Annual meeting. Secretary, Franklin H. Wentworth, 40 Central Street, Boston, Mass.

MAY 11-13.—WASHINGTON, D. C.
American Institute of Architects. Annual convention. Executive Secretary, E. C. Kemper, The Octagon, Washington, D. C.

MAY 11-18.—DES MOINES, IOWA.
American Association for Community Organization. Annual meeting. Executive Director, Dr. Allen T. Burns, 215 Fourth Avenue, New York.

MAY 11-18.—DES MOINES, IOWA.
National Conference of Social Work. Annual conference. Secretary, Howard R. Knight, 277 East Long Street, Columbus, Ohio.

MAY 12-13.—SAN ANGELO, TEXAS.
League of Texas Municipalities. Annual convention. Executive Secretary, Harvey W. Draper, 815 Capitol Avenue, Houston, Texas.

MAY 17-20.—PALISADES INTERSTATE PARK, NEW YORK.
National Conference on State Parks. Seventh National Conference. Secretary, Beatrice M. Ward, 905 Union Trust Building, Washington, D. C.

MAY 23-25.—DENVER, COLO.
Colorado Municipal League. Annual meeting. Secretary, Don C. Sowers, University of Colorado, Boulder, Colo.

MAY 23-26.—WHITE SULPHUR SPRINGS, W. VA.
American Society of Mechanical Engineers. Spring meeting. Secretary, Calvin W. Rice, 29 West 39th Street, New York.

MAY 26-28.—VANCOUVER, B. C.
Town Planning Institute of Canada. Annual meeting. Secretary, John M. Kitchen, City Hall, Ottawa, Ont.

MAY 31-JUNE 2.—NIAGARA FALLS, N. Y.
Conference of Mayors and Other City Officials of the State of New York. Annual meeting. Secretary, William P. Capes, City Hall, Albany, N. Y.

JUNE 4-6.—CHICAGO, ILL.
Conference of State Sanitary Engineers. Annual meeting. Secretary, Arthur P. Miller, 3 B Street S. E., Washington, D. C.

JUNE 6-8.—TULSA, OKLA.
American Association of Engineers. Annual convention. Acting Secretary, Miss M. E. McIver, 63 East Adams Street, Chicago, Ill.

JUNE 6-9.—WINDSOR, CANADA
International Association of Chiefs of Police. Annual convention. Secretary, George Black, Wilmington, Del.

JUNE 6-10.—ATLANTIC CITY, N. J.
National Electric Light Association. Annual convention and exhibition. Secretary, A. Jackson Marshall, 29 West 39th Street, New York.

JUNE 6-11.—CHICAGO, ILL.
American Water Works Association. Annual convention. Secretary, Beekman C. Little, 170 Broadway, New York.

JUNE 9-11.—MINNEAPOLIS, MINN.
League of Minnesota Municipalities. Annual convention. Executive Secretary, Morris B. Lambie, University of Minnesota Library, Minneapolis, Minn.

WEEK OF JUNE 13.—TORONTO, ONT.
Canadian Public Health Association. Annual meeting. General Secretary, J. T. Phair, Spadina House, Toronto, Ont.

WEEK OF JUNE 13.—ON BOARD S. S. KINGSTON, VISITING HAMILTON, NIAGARA FALLS, TORONTO, ONT., AND ROCHESTER, N. Y.
Union of the Municipalities of the Province of Quebec. Annual convention. Secretary-Treasurer. T. D. Bouchard, 120 Rue St. Jacques, Montreal, Que.

JUNE 16-17.—PHILADELPHIA, PA.
American Automobile Association. Annual meeting. General Manager, Ernest N. Smith, Pennsylvania Avenue at 17th Street, Washington, D. C.

JUNE 20-24.—DETROIT, MICH.
American Institute of Electrical Engineers. Summer convention. Secretary, F. L. Hutchinson, 33 West 39th Street, New York.

JUNE 20-25.—PARIS, FRANCE.
International Congress of Administrative Sciences. Third meeting. Address: Professor Leonard D. White, University of Chicago, Ill.

JUNE 21-23.—PORTLAND, ME.
New England Association of Fire Chiefs. Annual convention. Secretary, Chief John W. O'Hearn, Watertown, Mass.

JUNE 23-25.—FORT WORTH, TEXAS.
Chiefs of Police and City Marshals Association of Texas. Annual convention. Secretary, George A. Smith, P. O. Box 299, Dallas, Texas.

JUNE 26-30.—DENVER, COLO.
American Community Advertising Association. Annual meeting. Secretary-Treasurer, Don E. Mowry, 401 Cantwell Building, Madison, Wis.

JUNE 27-JULY 2.—STOCKHOLM, SWEDEN.
International Chamber of Commerce. Fourth general meeting. Secretary, American Section, Lacey C. Zapf, 1615 H Street, Washington, D. C.

JULY 17-23.—PALO ALTO, CALIF.
Western School for Commercial Secretaries. Address: Professor Edwin A. Cottrell, Stanford University, Palo Alto, Calif.

AUGUST 16-19.—SALT LAKE CITY, UTAH.
International Association of Municipal Electricians. Annual convention. Secretary, Erwin H. Benz, Municipal Building, West New York, N. J.; Chairman of Exhibit Committee, Daniel J. Morgan, Sales Engineer, Hazard Manufacturing Company, Wilkes-Barre, Pa.

AUGUST 22-SEPTEMBER 3.—NORTHWESTERN UNIVERSITY, EVANSTON, ILL.
National School for Commercial and Trade Organization Executives. Address: Hugh Lynch, Merchants Association, Woolworth Building, New York.

SEPTEMBER.—DULUTH, MINN.
International City Managers' Association. Annual convention. Executive Secretary, John G. Stutz, Lawrence, Kans.

SEPTEMBER 26-30.—CHICAGO, ILL.
National Safety Council. Annual Safety Congress. Managing Director, W. H. Cameron, 108 East Ohio Street, Chicago, Ill.

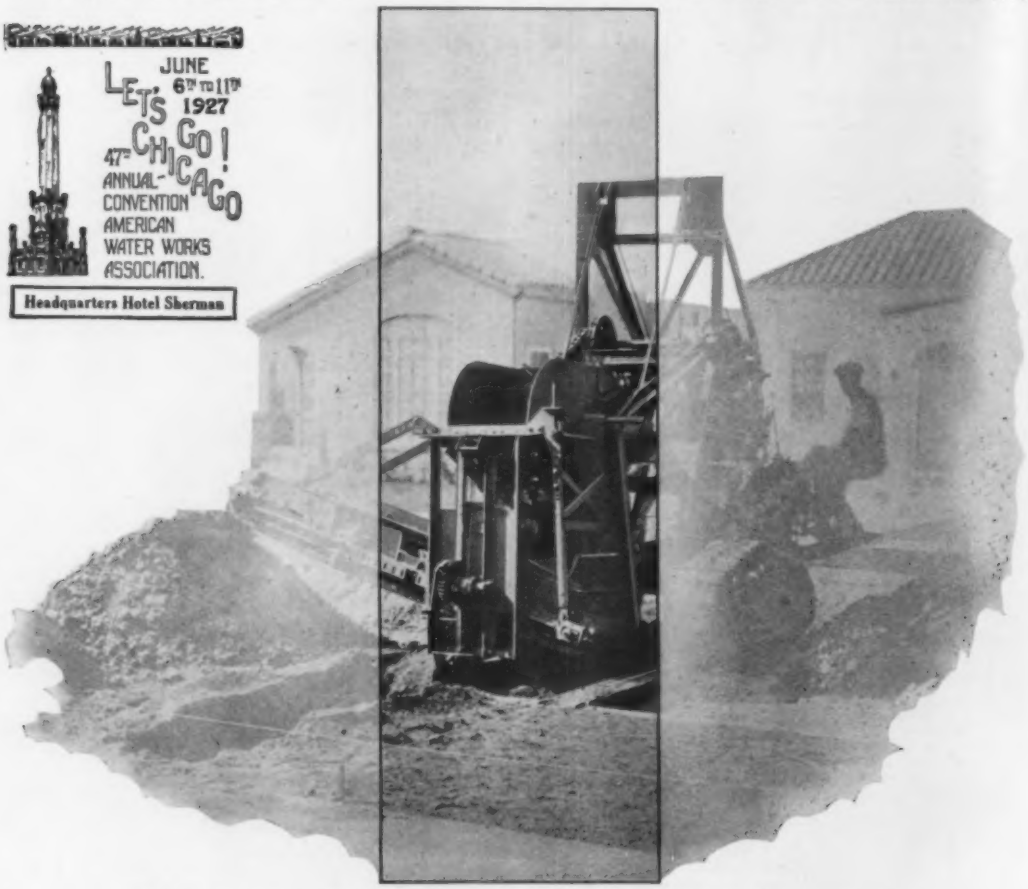
OCTOBER 3.—DENVER, COLO.
American Association of State Highway Officials. Annual meeting. Executive Secretary, W. C. Markham, 638 Munsey Building, Washington, D. C.

OCTOBER 3-7.—MEMPHIS, TENN.
Playground and Recreation Association of America. Annual convention. Secretary, H. S. Braucher, 315 Fourth Avenue, New York.

OCTOBER 17-21.—COLUMBUS, OHIO (TENTATIVE).
American Public Health Association. Annual convention. Secretary, Homer N. Calver, 370 Seventh Avenue, New York.

OCTOBER 23-26.—COLUMBUS, OHIO.
National Association of Commercial Organization Secretaries. Annual convention. Secretary-Treasurer, Clarence R. Miles, Chamber of Commerce, Davenport, Iowa.

THE BARBER-GREENE IS THE ONLY DITCHER THAT DIGS STRAIGHT DOWN



Straight Down---*to New Low Costs*

VERTICAL boom construction makes the Barber-Greene so compact and nimble that it cuts service laterals without shovel help—at a cost far below that of hand labor.

—so speedy that it has ripped off a mile a day on oil-field pipe lines.

—so husky that it cuts through Florida's coral rock without breaking a shaft.

As for costs—a Texas Barber-Greene dug over 9,000 feet of gas trench at 4c. above the cost of backfilling.

There are few words in this book—it's too full of pictures and cost records that illustrate a new field of contracting profits. A post card brings your copy of "Ditching Snapshots and Records." Send it today.

BARBER-GREENE COMPANY 515 W. PARK AVE., AURORA, ILLINOIS

Barber-Greene

Barber-Greene Ditcher

Representatives in 50 Cities

DISC FEED LOADERS VERTICAL BOOM DITCHERS
STANDARDIZED PORTABLE AND PERMANENT BELT CONVEYORS
SNOW LOADERS CAR UNLOADERS COAL LOADERS

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

New Buildings Use Everlasting Metals

In the construction of public buildings where permanence and beauty are important considerations, copper, brass and bronze are used in place of ordinary metals that will soon rust and mar the appearance of an otherwise beautiful structure.

The $25,000,000 New York County Court House, which has recently been completed, has lasting protection against the elements assured by copper roofing. Brass pipe has been installed as a guarantee against plumbing troubles. Throughout the building attractive bronze electric fixtures executed by the Tiffany Studios give a pleasing effect. Bronze window frames, grills, doors, and railings have been installed.

In the new Philippine Legislative Building at Manila, more than 200,000 feet of copper wire have been used. Bronze and brass have been selected for hardware and decorative purposes.

Pasadena, Calif., gave a thought to permanence, according to the Copper & Brass Research Association, 25 Broadway, New York, when it specified copper for the dome for its unusual City Hall. In addition, flashings and gutters are of copper.

The Cleveland, Ohio, Police Headquarters Building is also roofed with copper, 30,000 pounds being required for that purpose. The lattice work and the grills on windows and entrance are also of copper.

Duff A. Abrams Resigns

The Portland Cement Association, 33 West Grand Avenue, Chicago, Ill., has announced the resignation of Duff A. Abrams, for many years Director of its Research Laboratory. Professor Abrams inaugurated the present-day research in concrete when he took charge of the Structural Materials Research Laboratory in 1916. The research program then begun was supported by cooperation of the Lewis Institute and the Portland Cement Association. This joint arrangement continued until 1926, when the Research Laboratory was installed in the new headquarters building of the Portland Cement Association at its present address.

Professor Abrams' work in concrete research is internationally known. His bulletins and research papers have been translated into many languages and are standard reference works in concrete technology.

F. R. McMillan, Manager, Structural and Technical Bureau, Portland Cement Association, has been appointed Director of Research to have charge of all investigations in cement and concrete for the Association. H. F. Gonnerman, Associate Engineer, Research Laboratory, Portland Cement Association, has been appointed Director of the Laboratory.

CLEVELAND POLICE HEADQUARTERS, ROOFED WITH 30,000 POUNDS OF COPPER

TRACKSON CRAWLER

Greater Pull-Greater Speed Range

THAT'S what you want—ample power to "pull" regardless of ground conditions and kind of work. Speed when you need it. In no other 2-ton crawler tractor will you find a more economical combination of power with so wide a range of speeds.

In the Trackson-Fordson you get the greatest track area for steep pulls; you get lowest ground pressure per pound of weight for work in mud, sand, or snow; you get increased drawbar power; you get an all-steel crawler that converts the Fordson into the most generally adaptable 2-ton crawler tractor on the market.

This is what it will do—cut your costs on grading, leveling, ditching, trench filling, excavating, hauling and snow removal work. Use it as readily and as profitably one month as the other the year around.

Let us send you our *special Public Works bulletin.* It will mean a lot to you—it costs nothing but the asking and will show you how you can cut your costs. Send back coupon *today.*

Trackson Company
MAKERS OF FULL-CRAWLERS
518 CLINTON ST. MILWAUKEE, WIS.

These 6 Advantages Are Combined in no Other Crawler

1. All-steel construction—no cast iron parts.
2. Fewest working parts—lowest upkeep cost.
3. Patented non-clogging track of specially hardened alloy steel.
4. Greater track area—better traction—less ground pressure.
5. Oil reservoir type dirt-proof bearings.
6. Simple steering—no complicated clutches.

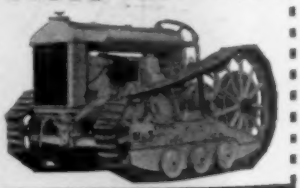
Trackson Company, 518 Clinton St., Milwaukee, Wis.,

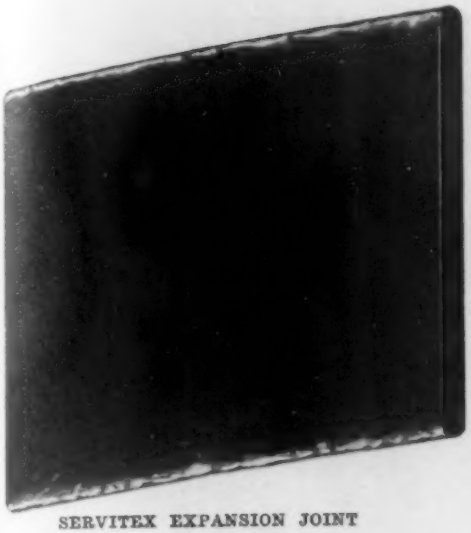
Gentlemen:—Without any obligation please send me specific information on the class of work indicated.

( ) Grading ( ) Excavating ( ) Loading ( ) Hauling ( ) Fresno ( ) Backfilling

Name _____

Address _____





SERVITEX EXPANSION JOINT

A New Expansion Joint with Fiber Board Base

The Servicised Products Company, 6051 West 65th Street, Chicago, Ill., has developed a new expansion joint for concrete road construction which it is marketing under the name "Servitex." The joint is made of Celotex impregnated with asphalt as described below.

Celotex is a matted fiber board composed of bagasse fiber, and is made by the Celotex Company, 645 North Michigan Avenue, Chicago, Ill. Before the fiber is matted, it is treated to remove all materials soluble in water which contain food for decaying bacteria. This leaves practically a pure cellulose which remains unchanged after successive moistening and drying, and unless conditions are extreme, deterioration is extremely slight. The fiber is, however, thoroughly protected by the colloidal action of a prepared compound, and actual wetting of the surface is very difficult to accomplish.

The process of matting produces a material which has two important properties—rigidity and porosity. Celotex may be cut and handled similarly to lumber, and normal temperature changes have no effect on its strength. By special processing the material can be shaped, and relatively sharp bends can be made without great difficulty. The shaped material is equally as rigid as the sheet material and responds to further treatment in the same manner.

Porosity is desirable from the standpoint of light weight and compressibility. Celotex requires only a moderate pressure to reduce the thickness to 50 per cent of the original value and the re-expansion is comparatively high. The fibers are sufficiently flexible to prevent their being broken on compression, and because of the numerous air spaces they remain almost intact when pressure is applied.

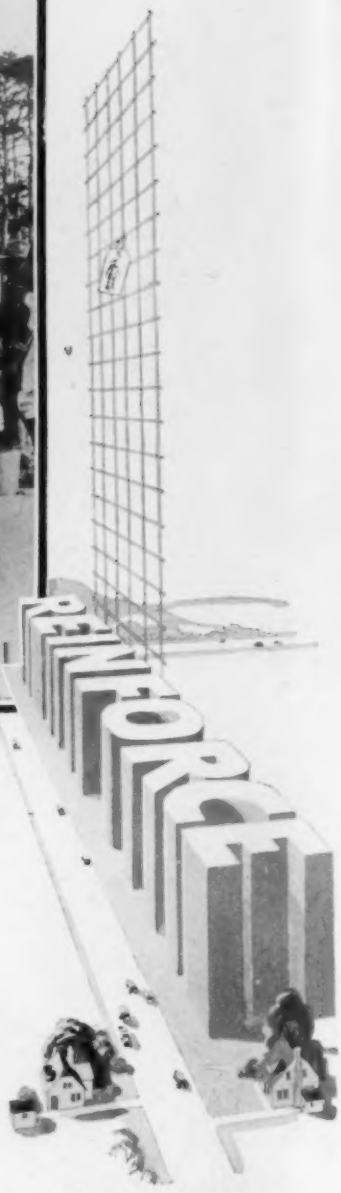
When Celotex is heated and immersed in a hot asphalt saturant, it absorbs as much as double its own weight of the bitumen without filling the air cells to any great extent. The surface of the fiber becomes coated with a thin film of material, and in many cases the individual strands become filled through capillary action. This is the first step in the use of Celotex to make Servitex expansion joint, which has been placed on the market by the Servicised Products Company, 6051 West 65th Street, Chicago, Ill. In this form the fiber is waterproofed but the surface of the mat is dry and non-adhesive. For further protection and to produce a surface which will adhere to the concrete, the saturated Celotex is dipped into a high melting point asphalt and completely jacketed. The coating asphalt is adhesive and non-brittle, but when slightly dusted does not cause the pieces to stick together during shipment.

This doubly waterproofed Celotex constitutes Servitex expansion joint. Recent experiments conducted in the Servicised Laboratories demonstrated that after being compressed to ¼-inch, a ½-inch piece of Celotex re-expanded slowly to 0.45 inches. This represents a permanent set of only 10 per cent of the total thickness of the piece and a recovery of 80 per cent of the total distance compressed. Similar tests on saturated pieces of Celotex showed that the amount of re-expansion was unaffected by the presence of the saturant, but the pressure required for a given reduction in thickness was somewhat greater. Re-expansion in the case of the saturated material was somewhat retarded, but that is of little consequence, since concrete moves slowly.

Modern traffic has become so heavy that most city pavements employing sheet asphalt, brick, granite block or wood block wearing surfaces require a concrete base. The conditions to which such a base is subjected are almost as severe as a one-course concrete pavement, and expansion and contraction take place with equal intensity. Fractures which result when no regular joints are provided are transmitted through the wearing course, and disintegration commences. A disintegration of the wearing course causes considerable impact to be thrust against the base when heavy trucks move over the point of fracture. The result is a gradual destruction of the pavement.

An ordinary type of asphalt expansion joint is inapplicable, since oozing will cause an upheaval of the wearing surface, thereby forming a ridge which is undesirable. The solid asphalt fiber

SERVITEX CENTER STRIP



Compare your Road Jobs in Terms of Profit

Two factors stand out, (1) Labor and (2) Time Loss.

Every possible opportunity for saving in labor means profit for you.

The welded fabric of National Reinforcing comes in sheets which permit easy, rapid handling . . . much more efficient than loose members in time and labor costs, as well as in the quality of the reinforcing itself.

In addition, National Reinforcing eliminates expensive tie-ups and delays arising through slow deliveries. As the world's largest manufacturer of steel fabric, we are able to ship immediately from stock—or fabricate your special requirements at once.

Write or wire our nearest district office for information and quotations.

Interesting Bulletins on the use of steel fabric in road construction will be sent on request.

NATIONAL STEEL FABRIC COMPANY

SUBSIDIARY OF PITTSBURGH STEEL CO.

709 UNION TRUST BUILDING, PITTSBURGH, PA.

Branches

ATLANTA, GA. CLEVELAND, O. NEW YORK CITY, N. Y. PORTLAND, ORE.
CHICAGO, ILL. DETROIT, MICH. PHILADELPHIA, PA. ROCHESTER, N. Y.
CINCINNATI, O. LOS ANGELES, CAL. PITTSBURGH, PA. SAN ANTONIO, TEX.
SAN FRANCISCO, CAL. SEATTLE, WASH. ST. LOUIS, MO.

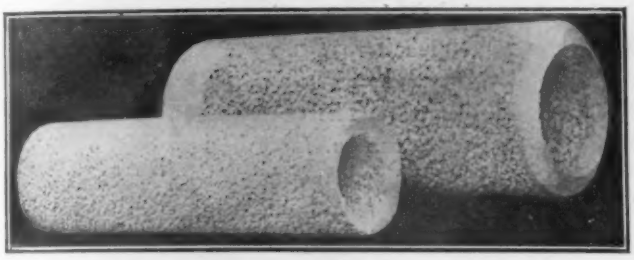
WORLD'S LARGEST MANUFACTURERS OF WELDED STEEL FABRIC

material shows no appreciable re-expansion, and since the joints are inaccessible, the space left by a contracted slab cannot be poured. Servitex is said to eliminate these objections and along with them the objections to expansion joints in concrete bases.

A Porous Concrete Pipe for City Work

A new type of drainage pipe which differs from all others in that the water is absorbed throughout the entire surface of the pipe, has been placed on the market by Walker Cement Products, Little Ferry, N. J. "Rapid Drainage Pipe" has a wide field of utility, covering street drainage, subdrainage of reservoirs, bridges, tennis courts, parks, sewage disposal plants, sea-walls, embankments, playgrounds, athletic fields, tunnels, dams, and building foundations.

This pipe is made of stone and cement only, thus insuring a permanency under superimposed loads. It is frost-proof, as its peculiar structure permits any appreciable expansion or contraction of its parts. The connecting ends are made concave and convex. Ordinary drainage pipe has specific sections, and the joints are relied upon to let the water penetrate. The disadvantages of this method are overcome by the new pipe, the full length of which permits water to enter the pipe. This pipe is manufactured in three sizes, the first having an inside diameter of 3½ inches and an outside diameter of 5 inches in 18-inch lengths. The second size is 5½ inches inside diameter, 7⅜ inches outside diameter, and in 18-inch lengths. The largest size is 8 inches inside diameter, 9¾ inches outside diameter, and in 20-inch lengths.



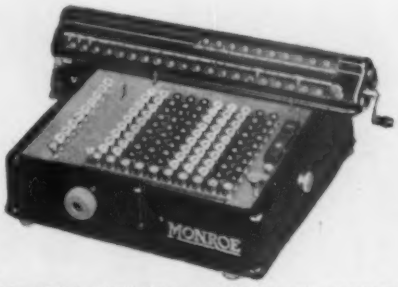
POROUS CONCRETE PIPE, SHOWING CONCAVE AND CONVEX ENDS

The Evolution of the Calculating Machine

Arithmetic began with the counting of fingers. Our word "digit" comes from the Latin word for finger. Abacus is the name given to the immediate successor of men's fingers in the mechanical counting field. The abacus existed in various forms in China, India, and Japan and has been used since as early as 2200 B. C.

Centuries rolled by without there being any significant change in the methods of calculation. The Middle Ages saw the beginning of dissatisfaction with the existing means of handling figures. Relief came about 1200 A. D., when our present system of numerical notation, which came from the Hindus through the Arabs, was introduced in Europe.

In 1642 Blaise A. Pascal, a young Frenchman, constructed the first model of an arithmetical machine providing for the counting of tens. It was never practical, on account of its extremely complicated and delicate mechanism. Various other machines were brought out from time to time.



THE NEW MONROE AUTOMATIC CALCULATING MACHINE

Frank Stephen Baldwin, an American, about 1870 produced the first directly reversible type of adding-calculator, by which addition and multiplication were performed with easy, simple forward turns of the crank, and subtraction and division with equally simple backward turns of the crank, without necessitating the manipulation of any change lever. At this time the country had not recognized the value of calculating machines, so the Baldwin calculator was not developed commercially to any extent. It was not until the meeting of Mr. Baldwin with J. R. Monroe in 1911 that Mr. Baldwin's idea took firm root. These men together developed the Monroe adding-calculator in rapid stages over a period of sixteen years.

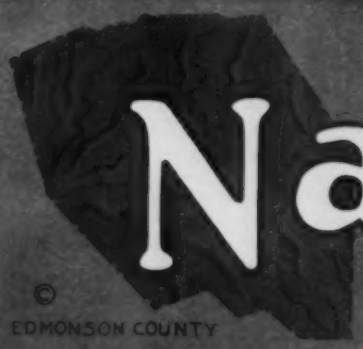
A new full automatic adding-calculator has recently been announced by the Monroe Calculating Machine Co., Inc., Orange, N. J. The new model is called a full automatic because all that is necessary to divide two numbers is to set one number in the lower dial and the other on the keyboard and push the division control key. The machine then carries through the complete division entirely of itself. Not only is the calculation made as rapidly as the answer can be conveniently copied, but the answer is infallibly correct, for the machine is just as mechanically exact as are figures themselves.

To multiply, one number is set on the keyboard and the multiplication made by touching the special multiplication key. The machine not only makes the multiplication by each figure, but shifts the dial carriage automatically to the proper positions.

These machines have found great use in municipal and county work in figuring assessments, taxes, apportionments, and other numerical work that a machine can do much more rapidly and with greater accuracy than the human hand and mind.

White Truck Prices Reduced

The White Co., Cleveland, Ohio, has recently announced reductions in prices of two truck models, namely Model 15 and Model 20, with reductions of $605 and $825, respectively. The former model, with ¾- to 1-ton capacity, was reduced from $2,150 to $1,545, and the latter, with 1½-ton capacity, from $2,950 to $2,125.



Natural

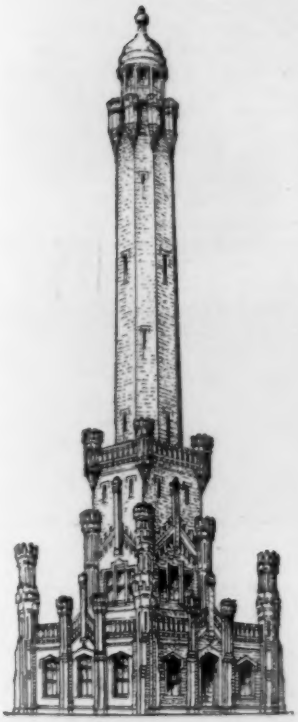
the STANDARD Kentucky ROCK ASPHALT

CONVERT your old macadam, gravel, brick, concrete and asphalt roadways into smooth, long-life pavements, by resurfacing with Natural Rock Asphalt. The cost is less than half that of new construction. Old roadways which are solid, but rough, make adequate bases for new surface. They have been thoroughly compacted. Weak spots have shown up and can be repaired. The new rock asphalt surface protects them from impact, abrasion and moisture. Properly resurfaced, they give service equal to, and often better than, complete new pavements.

Write for Booklet AC.

Resurfaced macadam at Memphis, Tenn.

Natural Rock Asphalt Corporation
INCORPORATED
Owensboro, Kentucky.
Producers of Highest Quality Natural Rock Asphalt from Edmonson County, Kentucky.



THE OLD CHICAGO WATER-TOWER

All Roads Lead to Chicago Again in June

Just as municipal officials were intensely interested in the Windy City in January when the American Road Builders Association held its annual meeting in the Coliseum, so are they looking forward to making the trip to Chicago again when the American Water Works Association holds its 47th annual convention, June 6-11, 1927, with headquarters at the Hotel Sherman.

If you have not been one of those who have received information from the Chicago Committee of One Hundred on Arrangements, write to Arthur E. Gorman, Chief Sanitary Engineer, Municipal Pier, Chicago, Ill., and a wealth of interesting literature on the Chicago convention will be furnished you gratis.

Chicago's famous old water-tower, erected in 1867, is the "trade mark" of the 1927 convention. Every time you see this illustration, think of Chicago, and make your arrangements to be there June 6-11 and enjoy the program of papers, waterworks exhibits, and the entertainment.

New Monarch Distributor

Monarch Tractors Corporation, Springfield, Ill., has announced the appointment of the Weber Implement and Automobile Co., as distributors for Monarch tractors in St. Louis, Mo., and for the southern Illinois and Eastern Missouri territory, as well as at Kansas City for western Missouri and eastern and southern Kansas. The appointment is also announced of E. F. Craven Co., Greensboro, N. C., as distributors in the state of North Carolina.

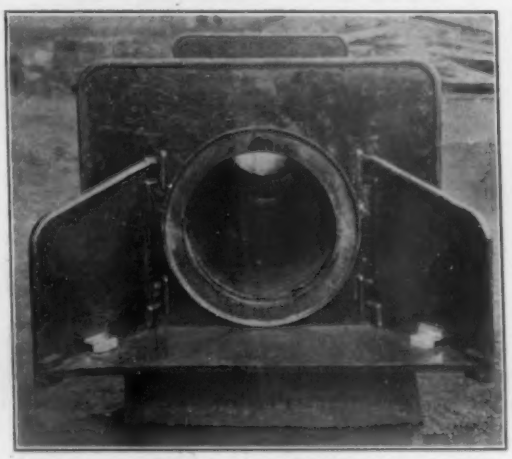
A Cast Iron Headwall for Spiral Corrugated C. I. Pipe

A cast iron headwall which is designed to take the place of concrete headwalls and which can be assembled without tools in ten to fifteen minutes, has been developed by the American Casting Co., Birmingham, Ala. Where speed is essential, this type of headwall eliminates any delay in pouring concrete, waiting for the set, tearing down the forms, and so on. Also, where the road is to be relocated, the culvert and headwall both may be salvaged and re-used.

In the adaptation of the cast iron headwall to use with spiral corrugated cast iron pipe, the inside of the bell is fitted with threads of such diameter and lead as to engage snugly in and prevent edgewise movement in relation to the culvert pipe. These internal threads are of two diameters in the same bell. The larger diameter is of such size as to engage the outside of spiral corrugated cast iron pipe, known as the cuff, the smaller diameter is of such size as to engage on the outside of the pipe.

The back wall is of such shape as to form the size of back apron desired. A circular opening is provided to allow the bell of the lock ring to enter. Other openings are provided of such size and so placed as to allow the wings of the side aprons to enter and lock in a predetermined position relative to the back wall.

The side aprons are made right and left hand and of such shape as to give the desired flare to the headwall. Locking wings are provided to engage openings in the back wall and to lock the side aprons in position. Keeper lugs on the lower inside surfaces of the side apron support the bottom apron and hold it in position. The side aprons are each and separately locked or keyed to the bottom apron by a cast iron double dovetailed key or castings. This key engages slots cast in the bottom apron and in the side aprons respectively, and when this key is placed in position, it securely locks and holds together these component parts and makes them as one. The keys are of cast iron material, the same as all other parts of the headwall. No steel locks or keys are used anywhere in the construction of these headwalls.



CAST IRON HEADWALL, SHOWING METHOD OF ASSEMBLING

Put your community in the forefront with an ARMCO-drained landing-field

THE rapid progress of aviation offers to aggressive communities a real opportunity for commercial leadership. Already many far-seeing cities and towns have made arrangements to provide for present or anticipated air transportation. A large, level, dry field for take-off and arrival, is required.

A landing-field presents a difficult drainage problem. Open ditches are out of the question. The field can be perfectly drained only by sub-drainage, such as is obtained with ARMCO perforated pipe.

The strength and flexibility of ARMCO pipe insure lasting service under heavy loads and the impact of landing planes. ARMCO will not fracture, crack or break. Even the pressures of freezing or swelling soils can do no damage. And the durability of pure ARMCO Ingot Iron provides a long service life, low maintenance cost and freedom from repairs.

The landing field is only one of the many places where ARMCO Perforated Pipes are providing better drainage and increased economy for cities —for preventing landslides—for the drainage of low spots and sand traps in golf grounds and parks, or whatever subsurface water must be removed quickly and certainly.

Valuable information on better sub-drainage is contained in our bulletin "Increasing the Efficiency of Roadbed Drainage." Every engineer and official responsible for the drainage of roadways, municipal areas or other properties should have a copy. Your name and address brings it without obligation.

ARMCO CULVERT MANUFACTURERS' ASSOCIATION
Middletown, Ohio

Forty modern Armco culvert plants in the United States and Canada assure you of prompt attention to your drainage requirements, no matter where you may be.

ARMCO CULVERTS

Predominant in use—because predominant in quality

In installing the cast iron headwall, the back wall is placed over the projecting end of the cast iron culvert pipe. The lock ring is then attached to the projecting end of the pipe and the back wall drawn back against the flange of the lock ring. The two side aprons are then engaged with the back wall. The bottom apron is then slipped into place, locking all parts in their proper relation, and dovetail keys are slipped into their respective slots, which ties in all parts.

Earth fill is then placed and rammed behind the back wall and side apron and under the bottom apron. The more earth pressure there is exerted against the surfaces of the headwall, the tighter the component parts are locked together.

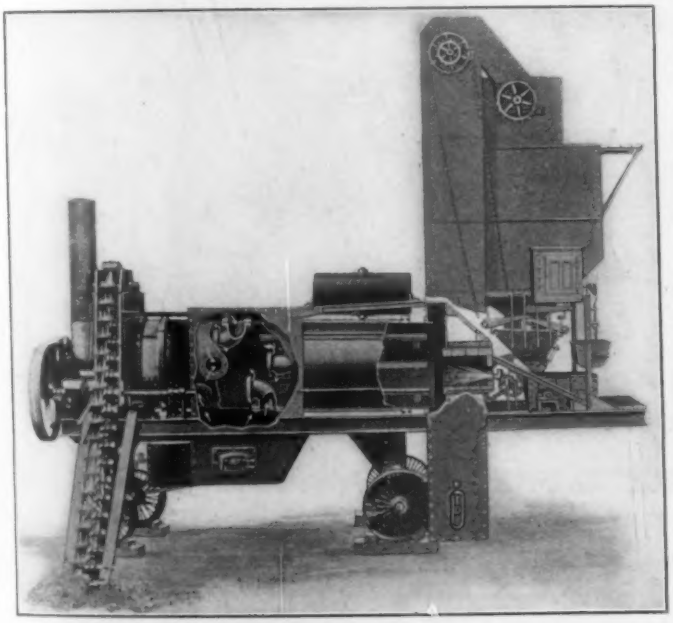
Rotary Dryer for Portable Asphalt Plants

A two-fire direct-heat rotary dryer for use with Cummer portable road asphalt heating plants, is featured by F. E. Cummer & Son Co., 2016 B. F. Keith Building, Cleveland, Ohio. The drying cylinder revolves on steel tires and rollers placed close to the front or feed end and to the discharge end. The cylinder is driven by suitable gears. The front end of the cylinder, except that part occupied by the front tire and supporting rollers, is enclosed by a fire-brick-lined casing for about one-half of its length. This portion of the cylinder has heat inlet holes cut in its walls. These walls are covered on the inside by hoods which allow the heat to enter but prevent materials from leaking out. The rear half of the cylinder is not enclosed, but is covered with heat-non-conducting materials. The rear end of the cylinder is closed by a breeching to which an oil-burning combustion chamber is fitted.

The casing around the front half of the cylinder extends considerably below the cylinder and forms a coal-burning furnace. At the forward end of this coal-burning furnace is fitted an oil-burning combustion chamber. This construction of the front half of the drying cylinder with the heat inlet openings and fire-brick-lined casings is the same as has been used on Cummer dryers for many years.

Wet stone and sand is fed through a feed spout in the breeching. As this wet material enters the drying cylinder, it is met by a blast of hot, dry air from the first hood, and as it travels toward the discharge end, it is met by fresh blasts of hot dry air from each succeeding hood. These hoods are placed at intervals of about 18 inches. Because of the fact that the material entering the drying cylinder is wet and cold, the heated air from the first hood quickly becomes saturated with moisture and loses its heat and is drawn out by the fan. The heat from the following hood loses its heat more slowly and stays in the cylinder a correspondingly long time as the material which is drying works toward the discharge end, constantly becoming warmer and dryer.

The drying cylinder is designed so that the material will be warm and almost dry before it passes the last heat inlet. The material then passes rearward into the dry heat from the rear oil combustion chamber. By regulating the supply of oil to this rear combustion chamber, the dried material can be discharged at any desired temperature from 200 degrees Fahrenheit to 1000 degrees Fahrenheit. The temperature of the sand and stone as it is discharged from the dryer is registered by a thermometer on the mixer platfrom in plain view of the mixer man. As he is responsible for the temperature of the asphalt mixture, he also has control of the oil supply to the rear combustion chamber, so that he can at all times have the mineral aggregate discharged into the storage bin over the mixer at the proper temperature.



SECTIONAL VIEW OF THE CUMMER PORTABLE ASPHALT PLANT
The ports where heat from the coal fire enters are shown, as well as the oil heater at the right

Badger Meter Manufacturing Co. to Open New York Office

The Badger Meter Manufacturing Co., 841-863 Thirtieth Street, Milwaukee, Wis., has announced that William F. Cetti, formerly Eastern Sales Manager for the company, with offices at 367 Fulton Street, Brooklyn, N. Y., resigned his office, effective February 28, 1927. D. F. Noonan, who was formerly associated with the Pittsburgh Meter Co., has been appointed Eastern Sales Manager. Mr. Noonan will have his office at 52 Vanderbilt Avenue, New York.

Gillooly Now with Sterling Siren

The Sterling Siren Fire Alarm Co., Rochester, N. Y., has anannounced that Frank Gillooly, 565 West 181st Street, New York, who for a number of years was connected with the Federal Electric Co. in the capacity of engineer, is new Sales Engineer, with headquarters in New York City.

CHICAGO

Now Installing 6,750 Additional CHICAGO CONCRETE Lighting Standards

TOTAL TO DATE

21,550 Concrete Lighting Standards (*359 Car Loads*)

THE LARGEST STREET LIGHTING JOB IN THE WORLD

Chicago Concrete Lighting Standards are manufactured by a jogging, vibration process, which was specified after numerous exhaustive tests, to be *used for the largest street-lighting job in the world.*

CHICAGO CONCRETE STANDARDS have been selected by the City of Chicago, the Chicago South Park Commissioners, and many other park commissioners and municipalities for their superior strength, beauty of design and finish, and their low first and maintenance costs.

Let us help you solve your lighting problems!

CHICAGO CONCRETE POST COMPANY

PAUL K. FLEMING, President

Lawrence, Lamon and Le'and Avenues

Chicago, Illinois, U. S. A.

A New Small Power Lawn-Mower

To aid park and cemetery superintendents in properly maintaining small restricted grass areas around trees, shrubbery, walks, markers, and monuments, the Ideal Power Lawn Mower Co., 400 Kalamazoo Street, Lansing, Mich., has developed a new type "Baby" power mower.

This new mower is only 20 inches wide, and because of its narrow width and special mechanical features, combines the easy manipulation of a hand mower with the time-saving advantages and increased efficiency of power mowing.

The mower has a special carburetor with throttle control so that the engine can be slowed down to the pace of a leisurely walk for turning around sharp corners and for cutting close to obstructions, but can be accelerated to a fast walk for cutting on steep grades and through exceptionally heavy grass. An important part of the new mower is the special S-type cutting reel with five blades equipped with roller bearings. This reel can be removed easily for regrinding and sharpening.

THE NEW IDEAL BABY MOTOR MOWER

A Compact Blueprint System

The compactness and simplicity of the Wickes blueprint system, according to its manufacturers, Wickes Brothers, 2017 Water Street, Saginaw, Mich., accounts for its low first cost. The contact between the tracing and the paper is maintained by means of a single wide, continuous belt passing around the feed rolls of the metallic cylinder and covering over 92 per cent of its circumference. The tension of this belt is regulated automatically and the light is projected directly in a radial line

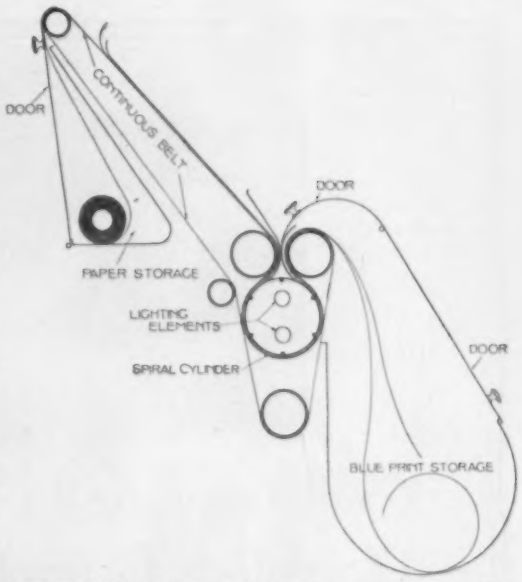
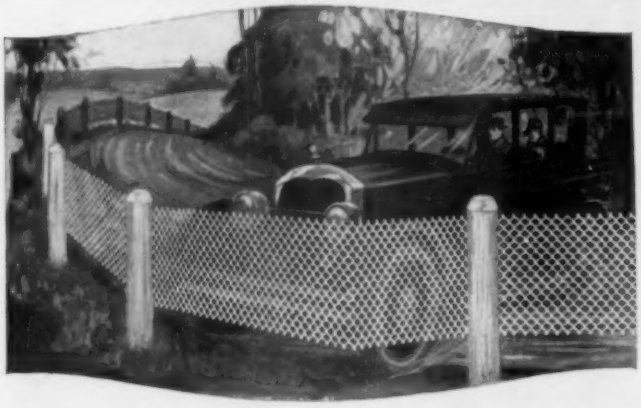


DIAGRAM SHOWING FEATURES OF THE WICKES BLUEPRINT MACHINE

through the tracing without having to pass through any intervening glass, nor is it deflected by reflectors of any sort. The spirally disposed wires of this cylinder offer less actual obstruction to the light than any glass cylinder, and the light is closer to the blueprinting paper in this machine than in any other, according to the manufacturers. The distance from the light to the paper is only 3 inches around its entire circumference. The accompanying illustration shows diagrammatically the features of the Wickes blueprinting machine.

Comparative Costs of Sewer Cleaning

At the Seventh Annual Conference of the International Association of Street Sanitation Officials, held in St. Louis in January, I. M. Goss, Deputy Commissioner of Streets, South Bend, Ind., gave some interesting figures on the relative cost of cleaning sewers by a horse-drawn bucket and with the Turbine sewer-cleaning machine. Two streets of practically the same length were chosen and the first cleaned with a bucket prepared with teeth and pulled through the sewer by a cable using a team for motive power. In cleaning the sewer by this method three men at $5 a day were employed and two teams at $9 a day each, making a total cost of $33 a day for men and teams. Since it took 24 days to clean 1,899 feet of sewer, the total cost was $792 with horse-drawn equipment. Then a corresponding length of sewer on Fourth Street was cleaned with the Turbine sewer-cleaning machine. Four men were employed at $5 a day each, and they took only five days in cleaning this 1,892 feet of sewer, or a total of $100 for the job. This gave a saving of $692 in cleaning the same length of sewer. In addition, it should be noted that several tons more of roots and other material were removed by the Turbine cleaner than with the horse-drawn equipment.



Cyclone Road-Guard Sales Have Doubled During the Past Year

This remarkable increase in the use of Cyclone Road-Guard indicates today's trend in the protection of highway danger points.

Without breaking, 70 feet of Cyclone Road-Guard will absorb all the kinetic energy of a 4,000-lb. car moving at a speed of 40 miles an hour! This is one of the amazing conclusions developed from Prof. Putnam's tables. Reprints sent free upon request, including illustrations of apparatus and complete data. Ask us for your copy.

Leading highway commissions standardize on Cyclone Road-Guard. Since they have done away with the obsolete wood guard rail and ended the menace of splinters and flying timbers, a new factor of safety has been recognized in highway engineering. Recent tests conducted by Prof. Putnam, Engineering Department, University of Illinois, reduce highway protection to a scientific basis. They reveal startling facts—explain in exact figures why Cyclone Road-Guard absorbs the impact of speeding cars and never has been broken through.

Write for complete information, including specifications in proper form for contractors' bids.

Also see Roads and Streets Catalog

CYCLONE FENCE COMPANY

Main Offices, Waukegan, Ill.

Works and Offices:
North Chicago, Ill.; Cleveland, Ohio; Newark, N. J.; Fort Worth, Texas

Branch Offices in All Principal Cities
Pacific Coast Distributors: Standard Fence Co., Oakland, Calif. Northwest Fence & Wire Works, Portland, Ore.

The Mark of Quality

Cyclone ROAD-GUARD

Reg. U.S. Pat. Off

(c) C. F. Co. 1927

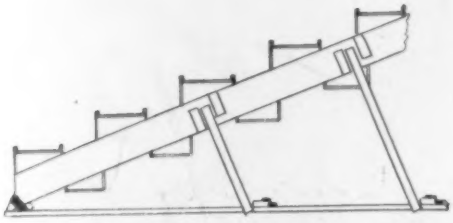
Knockdown Bleachers for Schools, Exhibitions and Playgrounds

There are many events held under municipal auspices where extra seating capacity in the form of bleachers is either desirable or necessary. In many cases a permanent installation is not advisable, but a bleacher of the knockdown type, such as made by the Leavitt Manufacturing Company, Urbana, Ill., is an ideal proposition. Knockdown bleachers are quickly set up when needed; and, according to actual tests, have shown they are twice as strong as is necessary to hold a maximum crowd.

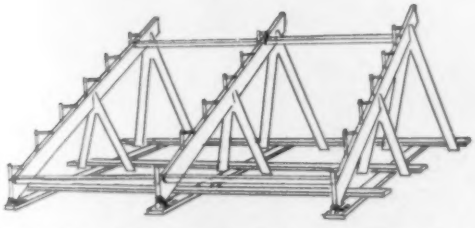
In setting up these bleachers, the framework is first laid out with sleepers spaced the length of the stringer ties. Then the horses, which are made of selected long-leaf yellow pine, are fitted into upright positions to hold the main supporting stringers. The stringer ties bind the stringers in place without the use of screws or bolts. Then the footboards and seatboards are placed. All seatboards, footboards, and the main supporting timbers are of high-grade fir, free from knots and gum and are planed so as to be free from rough edges and splinters.

To insure the solidity of the structure, a bolt for the lowest seat iron and for the top seat iron goes through the heavy stringer counter to the grain, preventing the stringer from splitting. There are also bolts run through the seat a short distance from the ends to prevent the board from splitting.

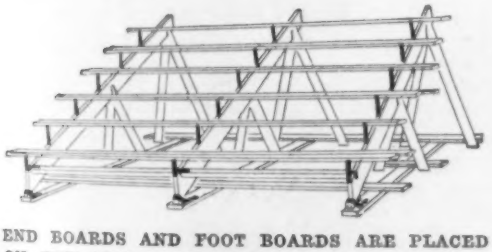
THE FRAMEWORK LAID OUT WITH SLEEPERS SPACED THE LENGTH OF THE STRINGER TIES



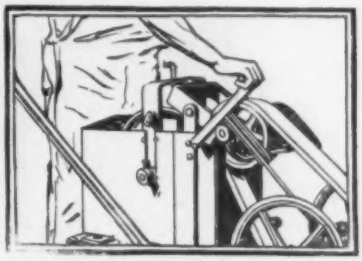
HORSES ARE QUICKLY FITTED INTO UPRIGHT POSITIONS



STRINGER TIES BIND THE STRINGERS IN PLACE WITHOUT THE USE OF SCREWS OR BOLTS



END BOARDS AND FOOT BOARDS ARE PLACED ON THE IRONS AND OVERLAP THE CORRECT DISTANCE



EASY CONTROL OF THE FEEDING OF PAINT ON THE CONTINENTAL ZONE PAINTING MACHINE

Improvements in Zone-Painting Machine

The well-known Continental zone-painting machine, made by the Continental Products Co., Euclid, Ohio, has had several new features added in the 1927 models, aimed to improve its work. The machine is now made with a one-piece frame all cast in aluminum. Among the other features of this line-painting machine are the control of the feeding of the paint through an adjustment screw which can be turned to the right or left in order to get a light or heavy line on the pavement. There is no slopping of the paint, because the minute the machine stops operating the paint stops flowing. The manufacturers claim that this machine uses less paint per mile of line. They state that if the feeding of the paint is properly adjusted, one gallon of paint will cover approximately 1,000 feet of 4-inch line. At the end of a day's work, a drain-cock is opened at the bottom of the machine and the paint quickly removed from the tank. Then all that is necessary for putting the machine away for the night is the removing of the paint from the belt and feed wheel.

DRAINING THE PAINT FROM THE LOWER SIDE OF THE TANK

A Set of Swings

will start your playground, provide the children with safe, wholesome enjoyment, and aid them in building healthy, vigorous bodies.

MEDART
PLAYGROUND EQUIPMENT

insures perfect safety, unusual endurance and an enthusiastic reception by the children. Write today for Playground Catalog, booklet "Planning a Playground," and attractive prices.

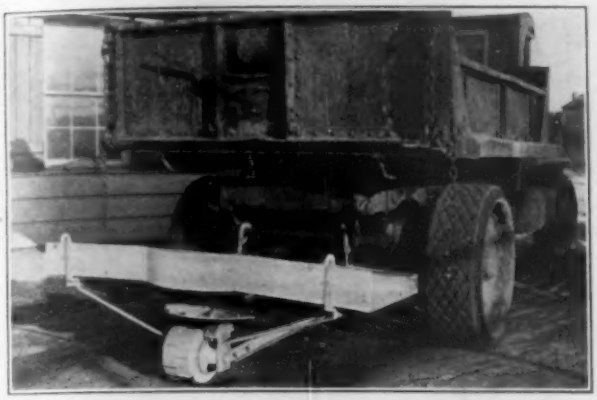
FRED MEDART MANUFACTURING Co.
3576 DeKalb Street, St. Louis, Mo.

New York Pittsburgh Philadelphia Cleveland Detroit
Chicago Kansas City San Francisco Los Angeles

A Chip Spreader for Road Work

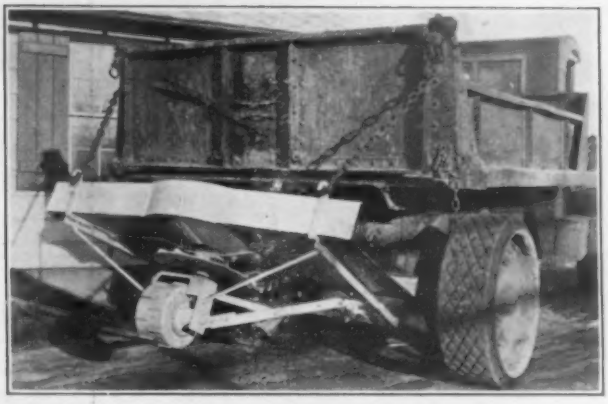
A chip spreader, which is a piece of independent equipment attachable to any make of truck in one minute, is now being made by the Good Roads Company, Inc., Upper Darby Post Office, Philadelphia, Pa., under the name "Goroco" spreader. This spreader will handle any loose aggregate such as screenings, stone or slag chips, gravel, sand, or cinders. The width of spread is governed by the speed of the truck and varies from 6 to 25 feet. The amount spread per square yard is controlled by the slide in the end gate of the truck. The amount can be varied from 5 to 50 pounds per square yard.

The accompanying illustrations show the construction of the spreader, with its rotating disc which throws an even spray of chips out over the roadway. It is claimed that this machine will save 90 per cent of hand labor costs. Two men and the Goroco spreader, providing sufficient truck capacity is available, can handle the covering of asphalt or tar, hot or cold surface treatments behind a bituminous distributor without undue rushing and with assurance of complete coverage.



AT LEFT—
SPREADER READY
FOR TRANSPORTATION

AT LEFT—
GOROCO SPREADER
ATTACHED TO
TRUCK



AT RIGHT—
SPREADER READY
FOR USE, TRUCK
BODY RAISED

ANY SLOGAN DESIRED

EVER-FLASHING
ELECTRIC
TRAFFIC SIGNALS

TRAFFIC
CONTROL

WELSBACH

TRAFFIC SIGNAL COMPANY

1934 Market St., PHILADELPHIA - - Peoples Gas Bldg., CHICAGO

A New Protective Coating for Submerged Concrete

Concrete as ordinarily made in the field frequently becomes disintegrated when exposed to sea water, swamp waters, certain alkali waters, distilled water, acids, and alkali soils in the western area of the United States. Properly graded concrete, however, made of specially selected materials, well mixed and placed and carefully cured so as to avoid draw cracks and crazed surfaces, may resist the disintegrating effect of these agencies. Even if the desire to produce nothing but the best concrete is paramount, it is impossible frequently to obtain the aggregate necessary for a perfect mix or, having obtained such an aggregate, it is difficult to produce uniformly perfect batches or to place the concrete properly once it is mixed. The relative frequency of failures of concrete when exposed to distintegrating agencies has invited study. Various methods have been advocated for preventing disintegration, but most of them have been of little or of doubtful value. The United States Bureau of Standards has issued bulletins on the subject and there have been contributions by other organizations. The U. S. Bureau of Public Roads has recently issued several articles on the subject.

The disintegration of concrete is, in most cases, due to physical or mechanical action rather than to chemical action, although the latter may play an important part under some circumstances. Loose or porous cement mortar or concrete when placed in sea water or in brackish water is rapidly destroyed. It is probable that the magnesium present in sea water enters the concrete and forms crystals which expand in volume and thus disintegrate the concrete. The same tearing-apart of the concrete is observed when it is exposed to soils that contain magnesium or sodium sulphate.

Since all waters except distilled water contain some dissolved salts, there is a possibility of concrete's being attacked and destroyed wherever it may be placed. Disintegration often starts at the draw cracks which form as the concrete shrinks during its setting and hardening periods, or at the crazed surface of a structure which has not been properly cured. If the concrete is porous, water will percolate through it. Some of the products formed will be leached out and there will be a breaking-down of the mass. Numerous treatments to overcome this have been suggested and tried. For the most part they are paints of various kinds which are intended to protect the surface of the concrete and thus keep out the destructive materials. There have also been many substances used as integral parts of the concrete, with more or less success.

A new product, known as "Protectar," has been develop by The Barrett Company, 40 Rector Street, New York, to meet the needs of the case. This material is a specially prepared tar of such consistency and penetrative power that it readily enters into the outer layer of the concrete and prevents the entrance of any other material. Protectar is produced in relatively small quantities and is obtainable at only a few tar plants. It is refined for the exacting demands made on it and is of uniform quality. It may be used on either new or old concrete structures. Its penetrative power is such that it has been used effectively on concrete only 24 hours old, which indicates that concrete to be protected need not be dry before the application of Protectar. The surface, however, should be clean, free from incrustations, seaweed, slime, or other matter that might prevent the successful application of the tar.

It has been found that well-made concrete will readily absorb several paint coats of Protectar. Total immersion of the concrete in the tar for a period of an hour is the equivalent of about six paint coats. The depth of penetration of the tar varies with the quality of the concrete and may be from 1/16- to ⅜-inch. This material may be applied by brush or by spray nozzle, or the concrete may be immersed in it. The latter method is used with cement blocks of suitable handling size.

There are two grades of Protectar and both are necessary for successful work. These grades are known as Protectar Prime and Protectar Seal Coat. The surface to be treated is cleaned. The prime coat is applied until the surface refuses to absorb more of it. This may vary from six to ten coats. After the final coat has been absorbed, a seal coat is applied in sufficient quantities to thoroughly seal the surface. The prime coat enters and protects the individual particles of the aggregate and cement while the seal coat remains on the surface to prevent seepage of any liquid into the concrete.

The manufacturers state that it is not necessary always to apply as many coats of the primer as stated above, although on important work the application should be made to refusal. The average quantity of prime coat necessary is about ¼-gallon per square yard of surface, and for seal coat about 1/10- to ⅛-gallon per square yard. Both grades are used cold. Protectar is advocated for protecting the concrete of dams, flumes, penstocks, spillways, vats, vaults, warehouse floors, concrete pipe, bridge abutments, piers, retaining walls, culverts, reservoirs, pipes, and the like. The Barrett Company calls particular attention to the fact that Protectar does not take the place of membrane waterproofing.

Hydraulic Development Co. Opens New York Office

The Hydraulic Development Co., 296 Boylston Street, Boston, Mass., has recently opened an office at 50 Church Street, New York. This company manufactures Lead-Hydro-Tite, a compound for making water-tight joints in cast iron mains. The sales of this product throughout New York, New Jersey, and Pennsylvania will be handled from the New York office. In addition to Lead-Hydro-Tite, this company has taken over the sales agency for the Cement Lined Pipe Co., of Lynn, Mass., and will have charge of sales for cement-lined pipe throughout the same territory.

Metcalf & Eddy Move Boston Office

Metcalf & Eddy, engineers, Boston, Mass., have removed their offices and laboratory from 14 Beacon Street to the Statler Building. They have also announced that Arthur L. Shaw and E. Sherman Chase have been admitted to partnership.

New Chemical Toilet Plant

The Chemical Toilet Corporation, Syracuse, N. Y., has recently moved into its new factory, which practically doubles its capacity for the manufacture of metal septic tanks and chemical toilets. This new factory was made necessary by the rapid increase in business during the last two years.

MEMBER AMERICAN ROAD BUILDERS' ASSOCIATION